THE OIL WEEKLY

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The Oil Man's Calendar

FEB. 9–12	American Institute of Mining and Metallurgical Engineers, Annual Meeting, New York.
26–27	American Petroleum Institute Division of Production, Southwestern District, Dallas, Texas.
28	North Texas Oil and Gas Association, Wichita Falls, Texas.
MAR. 23–25	American Society of Mechanical Engineers, Houston, Texas.
APRIL 16–17	National Petroleum Association, Thirty-ninth Semi-Annual Meeting, Hotel Cleveland, Cleveland, Ohio.
21–24	American Association of Petroleum Geologists, Twenty-seventh Annual Meeting, Cosmopolitan Hotel, Denver, Colorado.
22–24	Petroleum Industry Electrical Association, Shreveport, Louisiana.
NOV. 9–13	American Petroleum Institute, Chicago.

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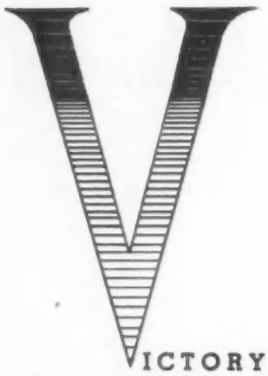
UNCLE SAM NEEDS NEOPRENE!



VICTORY will depend greatly on the enduring quality of our ships, planes, tanks and other mechanized equipment, all of which require large quantities of neoprene. So, for the time being, we must conserve frugally our supply of this vital material and use substitutes wherever possible.

The following is quoted from a letter from the Office of Production Management dated December 10, 1941: "The increasing requirements for neoprene in direct defense products make it necessary for all fabricators to use substitutes wherever possible. This synthetic cannot be allocated for use in those products where Perbunan, Hycar, or Thiokol can be used, and it is the duty of each manufacturer as well as the purchaser to see that such substitution is made at once. The Chemical Branch is depending upon the rubber manufacturer together with the respective engineers in the consuming industry to effect these changes without delay."

SPECIFY HYCAR INSTEAD

Murray Rubber Company, after months of experimentation, is now prepared to furnish Hycar O.R. compounded to individual specifications. Numerous oil tool manufacturers have already switched to this new synthetic oil-resisting rubber and report highly satisfactory performance.

Engineers in the consuming industry are invited to try **Murray's Hycar O.R.** compounds, an ample supply of which is assured for the present.

MURRAY RUBBER COMPANY
HOUSTON, TEXAS

The Changing Panorama

Let's Collect Scrap . . .

Elsewhere in this issue of THE OIL WEEKLY will be found a letter from a manufacturer of oil-country equipment suggesting that the industry take steps to salvage used rubber.

He says ". . . rubber goods used in the industry, such as piston rubbers, valve inserts, hose, gaskets, etc., should all be saved and accumulated at various points throughout the oil industry, to be reclaimed for use in other industries where virgin rubber is not required. In most cases rubber in the petroleum industry is not consumed but becomes worthless by breakage and 90 to 95 percent of the actual rubber contents is still there to be reclaimed."

Here is a suggestion which is practical and which will save a great deal of rubber. We commend it to the Mid-Continent Oil & Gas Associations, to the Oil Producers Agency of California, and other associations in other areas. Chambers of Commerce could cooperate with these associations. The idea is too sound not to be acted upon.

In this connection, these same groups might head up a cooperative drive to answer the OPM appeal that oil men collect as soon as possible all scrap iron and steel to help offset the acute shortage of scrap being felt at Navy mills and foundries doing important national defense work.

War Destruction . . .

Reports of the destruction of oil properties in Sarawak in advance of invading Japs, bring to mind a question which puzzled a great many Americans a year ago: "Why were the oil properties in Roumania not destroyed before the Germans moved in?"

The answer now can be given. Plans had been made, with the fullest support of the Roumanian government, to destroy wells, tanks and refineries, in the event Germany invaded Roumania, just as they were destroyed in the first World War in the face of the German advance. However, the Roumanian fifth column, the Iron Guard, siezed the properties some time in advance of the German move into Roumania, arrested and in some instances tortured English and Canadian nationals employed on the property, and put a stop to the plans for destruction.

This has not happened in Sarawak because there was no fifth column of sufficient size to interfere. That oil properties in the rest of the East Indies will be destroyed before falling into the hands of the Japs is a foregone conclusion. Nazi fifth columnists in the Netherlands East Indies are and have been for some time in concentration camps.

Fuel Oil Rationing . . .

A two-ocean war, and the consequent need for great quantities of heavy fuel oil to bunker the warships and supply ships operating on extended routes in both the Pacific and Atlantic oceans, may force rationing of this petroleum commodity sometime during 1942.

No doubt the industry will not have any difficulty in fulfilling the military and naval heavy fuel oil needs, but in doing so civilian consumption may have to be curtailed. Most fuel oil for home use is largely of a lighter grade, but heavy fuel oils are used extensively in factories, power plants and railroads—which are absolutely essential to modern warfare.

Unfortunately present inventories of heavy residual fuel oil are 6.7 million barrels under the level of a year ago. But fortunately, the largest portion of these stocks—about 65 percent or 62.5 million barrels—are on the Pacific Coast where the need may be more urgent.

Fuel oil deliveries to governmental agencies during 1940 were 38 percent above 1939, increased further in 1941 and will be enlarged at a more rapid rate during 1942 because of active fighting and expansion of the army and navy.

Statistical Blackout . . .

Among the many likely influences of the war is a blackout on the many statistical reports of the petroleum industry, especially where government figures are the basis. It is possible that there will be a total blackout on the numerous reports of the U. S. Bureau of Mines, Department of Commerce, and other governmental branches.

First move in this direction came when the Department of Commerce decided that due to the war "it is imperative that we withhold from publication all detailed export and import figures. This means that the department will henceforth suspend publication of all detailed export and import statistics for the duration of the war."

The importance of this action upon many of the industry's statistical reports depend upon the meaning given the word "detailed," for example export and import figures are necessary in figuring domestic demand accurately. No longer will the U. S. Bureau of Mines issue a detailed forecast of demand by states, hereafter giving only a national figure.

This probably is only the start on banning publication of petroleum industry statistics and developments.

Discovery Bonus . . .

Comments in these columns suggesting that state regulatory agencies encourage wildcatting by granting more liberal production allowables to discovery wells, has prompted several to inquire whether this could be considered equitable proration and if state statutes would permit.

So far as Texas is concerned, it would be possible for the Texas Railroad Commission to adopt a plan whereby an allowable of 1000 barrels daily would be given until 10 producing wells are completed. Section 3 of House Bill No. 782, passed by the Texas Legislature, amended the state's conservation laws, and this amendment includes these words:

"The commission shall not, under the terms of Subdivision (j) of Section 2 hereof, restrict the production of crude petroleum oil from any new field brought into production by such exploration until the total production therefrom aggregates ten thousand (10,000) barrels of crude petroleum oil per day, provided, however, the commission's power to restrict the production from such new field under the remaining subdivisions of said Section 2 shall not be affected or limited by this paragraph."

Oil Placed Under Virtual

OPC Will Specify State Production Allowables; Major Adjustments Due

PETROLEUM COORDINATOR HAROLD L. ICKES last week established what virtually amounts to war-time Federal control of oil production. The OPC took over from the Bureau of Mines the task of recommending the daily production of the individual states, and through a certificate method practically limiting the maximum yield to this figure ended wide open production in states without conservation laws and curbed those states previously inclined to exceed Bureau of Mines recommendations. It is anticipated that under this procedure that actual output will not be more than that recommended, in contrast with experience under the Bureau of Mines forecast system. The last Bureau of Mines production report showed daily average production in October of 4,069,200 barrels against a recommendation of 4,012,900 barrels.

Another very important development of the week, which increased the OPC control over the industry, was an order from the Office of Production Management (see page 11) that established a series of material ratings for oil based upon the character of the well. Equipment will be readily available for wildcats and wells on a 40-acre spacing pattern, but operators apparently will find it difficult to procure material on other operations without special OPC dispensation.

Production Certificates

What are in effect "certificates of necessity," showing the amount of oil which should be produced—but not exceeded—will be issued by the coordinator's office monthly to the regulatory bodies of states having conservation laws and to the governors of all other states. In the latter group, primarily Illinois, the states are expected to set up machinery to comply with the OPC request. This was accomplished a week ago in California, when the OPC Production Committee for District 5 was named the regulatory group after the state had operated on a voluntary program for 12 years. In Illinois, principal producing state with no production limitations of any kind, Ickes has been urging passage of a state measure, and has been especially insistent in recent weeks. Governor Dwight Green of Illinois notified Ickes that machinery would be set up to comply with the federal request. Meanwhile, a second special session of the state legislature may be called December 29 to consider a control law, but considerable opposition is still anticipated from some quarters.

Allocations Adjusted

The first certificates were sent out by the OPC December 23. They call for a national production of 4,138,400 barrels a day through January, or 600 barrels a day less than recommended for December in the last Bureau of Mines forecast of demand.

The breakdown for individual states included several noteworthy changes, there being a number of important adjustments. Despite leaving the nation's output practically unchanged, Texas' allocation was increased 93,800 barrels daily to 1,573,500 barrels. California received a boost of 10,400 barrels, and New Mexico was given an advance of 5100 barrels. Illinois, where flow has been open, was reduced by 40,100 barrels to 386,400 barrels, which, however, is but slightly under the rate it has been actually producing at in recent weeks. Oklahoma, where production has not been keeping up with Bureau of Mines demand forecast estimates, was dropped 44,300 barrels, to a level at which it has been producing. Louisiana's quota was 10,700 barrels less. A few other states had minor changes. January production rates for the 20 producing states, as set by the OPC, follows:

	Barrels Per Day	
	January	December
Texas	1,573,500	1,479,700
California	646,200	635,800
Oklahoma	415,700	460,000
Illinois	386,400	426,500
Louisiana	329,300	340,000
Kansas	259,900	260,700
New Mexico	121,200	116,100
Wyoming	78,600	81,900
Arkansas	73,700	76,500
Mississippi	60,400	60,300
Pennsylvania	47,400	47,300
Michigan	47,400	52,300
Montana	21,500	20,700
Indiana	17,300	19,700
New York	15,000	14,800
Kentucky	12,400	13,600
W. Va.	12,000	11,800
Ohio	9,000	9,400
Colorado	5,900	6,100
Nebraska	5,600	5,800

The new system is designed to enable the states to meet mounting war demands with better balanced production, it was explained. In the case of each state, the rate of output is based upon a finding of fact that production at, but not greater than, the amount assigned is essential to the national interest.

The Bureau of Mines will continue to issue its monthly forecast of demand, but without its state breakdown of production.

Reserves to Be Basis

At the same time, the OPC allocations will be developed with the long-view objective of eventually bringing production into conformity with the reserves in the various states. This would mean further large increases are likely for Texas.

But at the moment, Ickes said, "the national emergency no longer permits the present haphazard participation in supplying the national demand for petroleum that has heretofore characterized the production of many of the producing states and of many individual fields."

The new system also is designed to rectify situations where the recommendations of the Bureau of Mines have been ignored and production permitted at a rate disproportionate to the ability of a field to sustain such production. Primarily aimed at in this connection was Illinois where, it was pointed out, 38.5 percent of the state's known reserves were extracted in the single year of 1940.

In identical letters to the Texas

Wartime Federal Control

Railroad Commission and the regulatory bodies of the other conservation states, Ickes pointed out that the President's letter of May 28, appointing him coordinator, authorized him to make specific recommendations to insure the maintenance of a ready and adequate supply of oil and its products.

"In order to carry out this responsibility and to accomplish the objectives thus defined by the President," he said, "I will issue, beginning with January, 1942, monthly certifications, specifying a daily production rate for each oil producing state. The purpose of these recommended production rates will be to accomplish gradually, in the national interest, a better balanced participation by each oil producing state, in supplying the national demand for crude petroleum. To avoid undue dislocation, in determining the proper participation of each state, the principal weight will be given at first to the current demand for crude petroleum from each state, even if such demand has largely developed merely from the availability of petroleum and without regard to the ability of the state or area to maintain such a rate under conditions of efficient sustained production. As time goes on and old fields decline and new fields develop, increasing weight will be given to the ability of a state to maintain its rate of production of crude petroleum on an efficient and sustained basis of operation."

The form of certificate sent to Texas was as follows:

"Pursuant to the provisions of the President's letter of May 28, 1941, establishing the Office of Petroleum Coordinator for National Defense, it is hereby certified that the Office of Petroleum Coordinator for National Defense, after a careful, scientific and impartial investigation, collection and evaluation of all available pertinent data, and the findings and recommendations of the Bureau of Mines, has found that it is necessary, in order to insure the maintenance of a ready and adequate supply of petroleum and petroleum products for military and civilian needs, that

[*Continued on page 13*]

New OPM Order Provides Control Over Producing And Drilling Operations

MOVING at the instigation of Petroleum Coordinator Ickes so as to put his policies of conservative development into effect and at the same time place the oil industry on a full-scale war footing, the Office of Production Management on December 23 issued an order making "readily available" material for the drilling of wildcat wells and also of other new wells where a spacing pattern of not more than one well to each 40 acres is followed.

Establishing a basis for the conservation of production materials, the OPM conservation order soon will be accompanied by a priorities order (P-98) providing the means of actually procuring supplies for drilling and production purposes.

The two orders jointly will apply to production, but the priorities order will be one of a series in which ratings are set up, separately, for materials for production, refining, transportation and marketing.

In substance, the new OPM priority order gives the OPC virtual supervision over every oil well drilling and producing operation, as it provides the means of control. As often predicted in these pages, the means of control will be limiting equipment to drill new wells and operate producing wells. The new OPM order provides the "teeth" with which to accomplish this, through the provisions making it possible to establish definite equipment priority ratings on the basis of types of wells. So far definite establishment of fixed material priority ratings on the basis of the type of well has not been announced, and it is not certain that they will be absolutely standardized. However, rumors have it that wildcats may receive an A-2 or A-3 rating, with wells in proven fields on 40-acre spacing getting an A-4 rating.

In addition to materials for oil wells, the conservation order provides that materials will be made available for new gas wells drilling in conformance with a uniform spacing pattern of not more than one well to each 640 acres.

The policy embodied in the OPM orders was proposed by the coordinator to obtain the adoption of well-spacing practices that will both increase ultimate recovery of oil and minimize the use of critical materials, such as steel, nonferrous metals and rubber, by eliminating unnecessary wells.

"It is imperative," the order said, "that the production of petroleum be conducted under circumstances and conditions which will assure a maximum recovery of petroleum and associated hydrocarbons, and which will not involve a waste and inefficient use of the limited quantities of critical materials available for petroleum production."

Full Control Provided

Subject to certain exceptions, the OPM ruled that "no operator shall order, purchase, accept delivery of, withdraw from inventory or in any other manner, directly or indirectly, secure or use material for the production of petroleum," and directs that "no person shall deliver or otherwise supply, or cause to be delivered or otherwise supplied, any material which he knows, or should know, is intended for use in the production of petroleum."

Issuance of the order, Ickes said, "clears the way for long-awaited relief to the petroleum industry in obtaining the materials it so urgently needs to carry on necessary operations."

Equitable distribution of scarce materials among existing property interests is assured by a provision that individuals who desire to construct cycling plants, natural gaso-

[*Continued on page 13*]

Text of OPM Conservation Order M-68

Covering Production Material for Oil Industry, Effective December 23, 1941

WHEREAS, the Congress of the United States has declared a "state of war between the United States and the Imperial Japanese Government," and has further adopted Joint Resolutions "declaring that a state of war exists between" the Government of Germany and the Government of Italy "and the Government and people of the United States"; and

WHEREAS, the prosecution of this war requires the immediate increased use in emergency activities of vast quantities of steel, nonferrous metals, rubber, and other critical materials; and

WHEREAS, it is imperative to an effective prosecution of this war that the production of petroleum be conducted under circumstances and conditions which will assure a maximum recovery of petroleum and associated hydrocarbons, and which will not involve a waste and inefficient use of the limited quantities of critical materials available for petroleum production; and

WHEREAS, conservation of materials by means of the restrictions hereinafter ordered in the use of such material in the production of petroleum is necessary in order to maintain the production of petroleum for war uses and essential civilian services and to assure a minimum expenditure of scarce equipment;

NOW, THEREFORE, IT IS ORDERED THAT:

Section 1047.1

(a) Definitions

(1) "Person" means any individual, partnership, association, corporation, or other form of enterprise.

(2) "Production" means the discovery, development, and depletion of Petroleum Pools, including without limitation the operation of cycling plants and plants for the extraction of natural gasoline and associated hydrocarbons.

(3) "Petroleum" means petroleum, petroleum products, and associated hydrocarbons including but not limited to natural gas.

(4) "Operator" means any Person engaged in Production.

(5) "Material" means any commodity, equipment, accessories, parts, assemblies, or products of any kind used in Production.

(6) "Exploratory Well" means any well located not less than two miles from any well capable of producing Petroleum.

(7) "Condensate Field" means any condensate, distillate, naphtha, or retrograde Pool or Pools in which the liquid and gaseous hydrocarbons recovered at the surface occur in a single phase under original reservoir conditions or any gas-cap Pool in which commercial oil occurs in the liquid phase and in which there exist a gas-cap or gas-caps of a size sufficient to have the essential characteristics of a condensate Pool.

(8) "Pool" means any underground accumulation of crude petroleum or associated hydrocarbon substances, including but not limited to natural gas, constituting a single and separate reservoir or source of supply within a field, area, or horizon whether or not presently discovered or developed.

(b) Conservation of Material Used in Production

Subject to the exceptions in paragraph (c) hereof no Operator shall order, purchase, accept delivery of, withdraw from inventory or in any other manner, directly or indirectly, secure or use Material for Production purposes. Subject to the exceptions in paragraph (c) hereof, no Person shall deliver or otherwise supply, or cause to be delivered or otherwise supplied, any Material which he knows, or should know, is intended for use in Production.

(c) Exceptions

The provisions of paragraph (b) hereof shall not be applied in the following instances:

(1) To any case where Material is to be used by an Operator for repair or maintenance purposes or as operating supplies as these terms are defined in Preference Rating Order P-98.

(2) To any case where Material is to be used by an Operator exclusively in carrying out, by means of a research laboratory, investigations into more efficient or more effective methods of conducting Production operations.

(3) To any case where Material is to be used by an Operator exclusively for operations directly involved in the search for and discovery of a previously unknown Pool, including without limitation Material necessary for geological, geophysical and geochemical prospecting and Material used in the drilling and completion of any Exploratory Well.

(4) To any case where Material is to be used by an Operator in secondary recovery operations by means of artificial water drive, gas drive, or air drive operations, but not including Material to be used in Production operations by means of primary gas cycling or pressure maintenance.

(5) To any case where Material necessary for lease equipment, including oil treating equipment and salt water disposal or injection equipment, but not including pumping or other artificial lifting equipment, is to be used by an Operator.

(6) To any case where Material is to be used by an Operator for pumping or artificial lifting equipment to be installed on a well located on any single lease or tract in any field on which lease or tract the number of wells to which pumping or artificial lifting equipment has been or is to be attached does not at any time exceed an average of one well to every 10 surface acres of that part or parts of such lease or tract as are contained within the productive limits of the field; or to any case where Material is to be used by an Operator for pumping or other artificial lifting equipment to be installed on a well located on any single lease or tract of 10 acres or less in any field on which lease or tract no other wells are located to which pumping or other artificial lifting equipment is attached.

(7) To any case where Material is to be used by an Operator to drill or complete any well in any discovered or undiscovered oil field, other than a Condensate Field, where such well conforms to a uniform well-spacing pattern of not more than one single well to each 40 surface acres.

(8) To any case where Material is to be used by an Operator to drill, complete, or provide additions to any well in any discovered or undiscovered natural gas field, other than a Condensate Field, where such well conforms to a uniform well-spacing pattern of not more than one single well to each 640 surface acres.

(9) To any case where the Director of Priorities, Office of Production Management, upon recommendation of the Office of Petroleum Coordinator, has determined that Production is necessary by any Operator or in any field where any conditions in such field make it necessary and appropriate in the public interest and to promote the war effort. Application for such a determination shall be made by letter and filed with the Petroleum Coordinator for National Defense, Department of the Interior, Washington, D. C. Information to be submitted in such application shall be in accordance with OPC Form PD-214a, OPC Form PD-214b, or OPC Form PD-214c, issued by the Office of Petroleum Coordinator.

(d) Restriction on Subdivision

No single lease or tract existing as such as of the effective date of this order shall be subdivided or otherwise rearranged for the purpose of making available to any Person the provisions of paragraph (c) (6).

(e) Violations

Any Person affected by this Order who violates any of its provisions or a provision of any other Order or who by any act or omission falsifies records to be kept or information to be furnished pursuant to this Order may be prohibited from receiving further deliveries of any material subject to allocation, and such further action may be taken as is deemed appropriate including a recommendation for prosecution under Section 35 (A) of the Criminal Code (18 U.S.C. 80).

(f) Revocation or Amendment

This Order may be revoked or amended at any time as to any Person. In the event of revocation, deliveries shall be made in accordance with the provisions of any applicable Preference Rating Order without further restrictions, unless such deliveries have been specifically restricted.

(g) Applicability of Priorities Regulation No. 1

This Order and all transactions affected thereby are subject to the provisions of Priorities Regulation No. 1, as amended from time to time, except to the extent that any provision of this Order may be inconsistent therewith, in which case such provision shall govern.

(h) Effective Date

This Order shall take effect on the date specified in the heading hereof, and shall continue in effect until revoked.

(P. D. Reg. 1, Aug. 27, 1941, 6 F. R. 4489; O. P. M. Reg. 3, Amended Sept. 2, 1941, 6 F. R. 4865; E. O. 8629, Jan. 7, 1941, 6 F. R. 191; E. O. 8875, Aug. 28, 1941, 6 F. R. 4483; sec. 2(a), Public No. 671, 76th Congress, Third Session, as amended by Public No. 89, 77th Congress, First Session; sec. 9, Public No. 783, 76th Congress, Third Session.)

Issued this 23rd day of December, 1941.

line plants, gas return, pressure maintenance, or cycling plants may file an application with the OPC. Individuals or fields desiring a well-spacing pattern other than provided for in the order also may file an application for such pattern.

The restrictions also will not apply in the following instances:

1. To material to be used for repair or maintenance purposes or as operating supplies.

2. To any case where material is used by an operator exclusively for operations directly involved in the search for and discovery of a previously unknown pool. This includes material necessary for prospecting and material used in drilling and completing exploratory wells.

3. To any case where material is to be used exclusively for carrying out investigations into more efficient methods of conducting production operations.

4. To any case where material is to be used by an operator engaged in secondary recovery operations by means of artificial water drive, gas drive, or air drive operations, but not including material to be used in production operations by means of primary gas cycling or pressure maintenance.

5. To any case where material necessary for lease equipment, including oil treating equipment and salt water disposal or injection equipment, but not including pumping and artificial lifting equipment, is to be used by an operator.

6. To any case where material is to be used for pumping or other artificial lifting equipment on any lease of over 10 acres on which the number of wells to which pumping equipment has been, or is to be, attached does not exceed an average of one such well to every 10 surface acres; also to any case where material is to be used for pumping equipment on a lease of 10 acres or less, on which lease no other wells are located to which pumping equipment is attached.

7. To any case where the priorities division of OPM, upon recommendation of the OPC, has determined that production of petroleum by any operator is necessary and appropriate in the public interest and to promote national defense.

Discussing the OPM order, Ickes explained that the exceptions are designed to protect, so far as possible, the continued discovery and development of new reserves.

"Ample provision," he added, "has been made for individualized treatment which will permit individual operators and individual fields to secure materials assuring a drilling and construction program commensurate with the maximum recovery of petroleum located in existing reserves."

While Ickes took the position that the order would make material "readily available" under the circumstances he outlined, the OPM itself declared that the use of materials for the development of new wells is put "under strict control," and explained that its purposes were:

1. To accomplish the development and production of petroleum resources with the minimum expenditure of scarce materials consistent with a maximum efficient, practicable operation of such resources;

2. To accomplish the development and production of such resources in an orderly manner so as to utilize most effectively natural reservoir forces available to produce oil and thus to secure the highest economical practicable recovery of oil and gas for the war effort; and

3. To avoid the drilling of unnecessary wells, which may in fact be detrimental to the development and production of petroleum resources, thus avoiding an unnecessary consumption of scarce materials attendant upon such drilling.

"Since wells on the pump and stripper wells produce an important percentage of the total quantity of oil produced, it is necessary that equipment used in these depletion operations be kept in condition and, when necessary, implemented by the addition of new material," the OPM explained. "But, since it is also necessary that there be an equitable distribution of available equipment in fields already drilled, as well as in new developments, restrictions have been imposed which will insure a proper distribution of scarce equipment, such as casing, tubing, valves, and pumping or artificial lifting equipment, among existing property and equity interests engaged in the production of petroleum.

"It should be noted that the order emphasizes the necessity of the increased search for and discovery of new reserves of petroleum so that the drain on the country's present petroleum reserves, engendered by the war effort, may be equalized by the discovery of new pools, assuring a continued and adequate supply of this vital defense product.

"Further, to provide flexibility in the administration of this order, an exception provision has been incorporated therein which will permit consideration of individual situations where it seems desirable, in order to provide the most effective and efficient operation consistent with a minimum expenditure of scarce materials, to deviate from its general provisions."

Text of the OPM conservation order appears on page 12.

As he prepared to leave for Christmas on his Maryland farm, Ickes received assurance from the Texas Railroad Commission that the OPM order would be strictly enforced, and permits for drilling would be made contingent upon OPC and OPM authorization for the necessary material.

"The railroad commission of Texas has adopted OPM Order No. M-68 as part of state conservation program. Statewide spacing changed from 20 to 40 acres," the coordinator was advised by Commissioners Sadler and Culberson by wire December 24.

"The following provision with no exception will be included in all orders for drilling permits: it is further provided that this permit shall not become effective except and until the Office of the Petroleum Coordinator for National Defense and Office of Production Management shall have granted the necessary authorization for such materials as may be necessary for the drilling and completion of such wells as covered by this permit."

OPC Control

[*Continued from page 10*]

the production of crude petroleum in the state of Texas be at the rate of, but not greater than, 1,573,500 barrels daily, during the month of January, 1942.

"The above stated amount is hereby recommended to the Railroad Commission of Texas as the operating schedule for the state of Texas during said period, beginning as of 7 a.m. (Standard Time at place of production), January 1, 1942."

Washington Roundup

Pipe lines placed under newly appointed federal transportation facility coordinator . . . Gasoline patent owning companies agree to fifty percent reduction in royalties . . . OPC studying difficulties of Rocky Mountains

By B. F. LINZ, Washington Correspondent

COORDINATION of the oil industry for national defense took several notable steps forward during Christmas week, with Coordinator Ickes assuming control of state production allowables (see page 11) and the Office of Production Management defining clearly the types of operation for which priorities assistance will be given (see page 12) in securing of critical materials.

The imposition of Federal control on production was not unexpected; it had been rumored for several weeks, and the groundwork had been laid in the previous week's order initiating a conservation plan for California.

Primary basis of the OPC's allocations for production will be the ability of the various fields of a state to produce the oil necessary for the war with a minimum of reservoir abuse, and there will be an effort to so direct production as to insure the maximum life of the reserves. Apparently allocation of state allowables to individual fields will be left largely up to state conservation boards.

The OPM order, designed to secure a maximum of development with a minimum of scarce materials, provides that new fields shall be developed on a basis of one well to 40 acres, but at the same time provides for materials essential to the efficient operation of existing fields and is designed to give impetus to wildcat exploration and development.

The oil front in Washington broadened considerably during the week. At the White House, President Roosevelt announced appointment of a coordinator of transportation who would have control not only of railroads but of pipe lines and coastwise and inland waterway shipping. At the Department of Justice, it was announced that a consent decree had been filed to settle the pipe line cases, limiting the return from oil company owned lines to seven percent.

Following up previous orders designed to expedite the expansion of facilities for production of 100-octane aviation gasoline, the OPC announced during the week that the several companies which developed alkylate bases for the fuel had agreed to a 50 percent cut in royalties for the next 18 months, and a further cut then to go into effect.

Transportation Control

Coordination of all domestic transportation facilities, including pipe lines and inland waterways, coastwise and intercoastal shipping, with Joseph B. Eastman, chairman of the Interstate Commerce Commission, as director of defense transportation, was ordered by President Roosevelt December 23.

Eastman will have complete control of all transportation facilities, and will be authorized to establish priorities and preferences for the transportation of defense materials and products.

Specifically, he was ordered by the President to coordinate the transportation policies and activities of the several federal agencies and transportation groups in effecting such adjustments in the transportation systems of the nation "as the successful prosecution of the war may require."

Compile and analyze estimates of the requirements to be imposed upon existing facilities by the needs of the war effort; determine the adequacy of such facilities to accommodate the increased traffic occasioned by the war; develop measures designed to secure maximum use of existing facilities, and stimulate the production of necessary additional facilities;

Coordinate and direct traffic movements with the objective of preventing congestion and assuring the orderly and expeditious movement of men, materials and supplies to points of need;

In cooperation with the Maritime Commission and other appropriate agencies, coordinate domestic traffic movements with ocean shipping in order to avoid terminal congestion at port areas and maintain a maximum flow of traffic.

Gasoline Patents

An immediate 50 percent cut in royalties on aviation gasoline patents, from 42 to 21 cents per barrel, and a further cut to 15 cents per barrel on July 1, 1943, will save the government more than $5,000,000 a year under an agreement which Coordinator Ickes on December 23 announced had been reached with Texaco Development Corporation, Shell Development Corporation, Standard Oil Development Company, Anglo-Iranian Oil Company, Ltd., and Universal Oil Products Company.

The agreement, it was explained, will make it possible for refiners to whom heretofore the processes for making 100-octane gasoline have not been available, to participate in the OPC program to expand aviation fuel production.

In seeking the agreement, Ickes said, "we were aware that large sums of money had been spent by these developing companies on research and preliminary work.

"Nevertheless, realizing that the process was a great contribution to our air supremacy, we were desirous that the amount paid in royalties should be kept as low as possible, especially since the 100-octane gasoline was to be bought

almost exclusively by the government for the use of our own armed forces and our allies.

"This office sincerely appreciates the patriotic cooperation of the developing companies in making this royalty reduction possible, and in making their technical assistance available in furthering this essential program."

The royalties to be reduced are those on the "sulphuric acid alkylation process," developed contemporaneously by the several companies in Holland, England and the United States, working independently.

The agreement provides that the royalty shall be reduced from 42 to 30 cents per barrel of "alkylate" produced commercially by refiner-licensees, and from 42 to 21 cents per barrel on "alkylate" produced and sold by refiner-licensees either to the armed forces of the United States or, upon the direct or indirect request or order of the United States or any agency thereof, for the use of the armed forces of any foreign country, with a further reduction to 15 cents after July 1, 1943.

Rocky Mountain Trouble

Difficulties encountered by small refiners in Wyoming and the Rocky Mountain area generally in securing crude supplies are under study in the OPC, following a complaint to the coordinator by Senator Joseph C. O'Mahoney that the producers will not sell such accounts.

Before laying the matter before Ickes, however, the Senator secured a report on the Wyoming situation from W. C. Mendenhall, director of the Geological Survey, in which it was admitted that practically the only crude available to the small independent refiners is the Government's royalty oil.

Mendenhall pointed out that while the reasons that have governed Standard Oil Company and its subsidiaries in their postings of field prices are not positively known to the Geological Survey, the difficulty that small refiners have in securing crude is more easily understood.

"Independent producers prefer to sell to major refiners because they have better assurance of prompt and complete payment and because it is generally better for their business to be on good terms with their major competitors," he said. "They are likely to sell crude to independent refiners only when they cannot sell to majors or when they receive a substantially higher price from independents. Major producers have so many relationships with major refiners that they naturally look to the latter for such markets as they need. They are naturally loath to encourage sales to independent refiners who compete with the majors in the local market for gasoline."

The report included a table showing that for some years the average posted price of Lance Creek crude was 25 cents a barrel under the Mid-Continent price but for the past several months has been only five cents lower.

On the basis of these figures and other data, survey experts concluded that the difficulty of the small refiners is presumably because "(a) they want only high-grade light oil; (b) they want quantities so small that large producers prefer not to bother with them; (c) the assurance of payment for crude they purchase is perhaps somewhat doubtful; and (d) the major producers have contracted with major refiners for substantially all crude not desired for their own needs, leaving only Government royalty oil and crude produced by independents available for purchase by independent refineries."

Advising the Senate that he had asked the OPC to stimulate the production of crude and provide adequate supplies for the independent refiners, O'Mahoney declared that if this cannot be accomplished in any other way it is "a matter which should be taken up through legislation."

Pipe Line Profits Curbed

Pipe-line rebates and excessive profits were brought to an end December 23 by a complaint and consent decree filed in the United States Court for the District of Columbia by the Department of Justice.

The decree limited the profit of oil companies from their common carrier pipe lines to seven percent on a valuation fixed by the Interstate Commerce Commission.

Twenty major oil companies, 52 common carriers by pipe line and seven companies which are subsidiaries or affiliates of the major companies were named in the complaint, which charged violation of the rebate provisions of the Interstate Commerce and Elkins Acts.

The department asked the court to enjoin common carriers by pipe line from granting refunds and rebates against regular tariff charges for the interstate transportation of crude oil and petroleum products, and from adopting and utilizing any scheme or device which results in their failure strictly to observe published tariff rates, and to enjoin pipe line shipper-owners from receiving refunds and rebates against, or any reductions from, regular tariff charges for the interstate transportation of their property.

The government alleged that the lines have paid to their stockholding shipper-owners refunds and rebates under the guise of dividends upon holdings of stock in the pipe line companies, and contended that these refunds and rebates often have amounted to exorbitant returns upon such stock, that the oil company owners have obtained and enjoyed a discriminatory advantage over other shippers of oil, and that the ability of other shippers to compete in the markets served by the lines has been seriously impaired.

All of the allegations were denied by the defendants.

Under the terms of the decree:

No defendant common carrier may pay, directly or indirectly, to any shipper-owner in any calendar year (commencing January 1, 1942) any earnings derived from transportation or other common carrier service which, in the aggregate, are in excess of its seven percent share of the Interstate Commerce Commission's valuation of the common carrier's property, if the common carrier has transported any commodities for such shipper-owner during the calendar year.

No shipper-owner may receive, directly or indirectly through any device whatever, any payment in excess of the seven percent which the carrier pipe line may legally pay.

Net earnings of the lines in excess of the seven percent permitted to be paid to their stockholders shall be transferred to a special surplus account and used only for the extension of existing, or construction or acquisition of, common carrier facilities, for normal and reasonable working capital requirements, or for the retirement of any outstanding debt originally incurred for the purpose of, and

the proceeds of which were expended in, construction or acquisition of common carrier property.

Any excess funds withdrawn from the special surplus account and used for new pipe line construction or the extension of old lines may not be included in valuations of common carrier properties upon which the seven percent rate is permitted.

The United States may recover, in this action, from any recipient three times the amount of any sums received in violation of the judgment.

Annual reports, containing information which will permit the government to ascertain whether the judgment is being obeyed, shall be made by each common carrier pipe line to the Attorney General.

The consent decree is designed to dispose of the government's whole campaign under the Elkins Act, in the course of which three suits were previously brought and nearly 60 more planned. The department announced that it had agreed to dismiss the suits brought on September 30, 1940, against the Phillips Petroleum Company, Phillips Pipe Line Company and Great Lakes Pipe Line Company in the Delaware District Court, and against the Standard Oil Company of Indiana in the District Court for the Northern District of Indiana.

Council Appointments

Appointment of Russell B. Brown, general counsel of the Independent Petroleum Association, and Fayette B. Dow, general counsel of the National Petroleum Association, as non-salaried assistants to the chairman of the Petroleum Industry Council was announced by Chairman W. R. Boyd, Jr., December 23.

Boyd said that Brown will be assigned to deal with problems related to production and priorities and Dow will handle refining, transportation and marketing activities.

New Committeemen

Appointment of three additional members to the marketing committee for District No. 3 were announced last week by the OPC, as follows:

R. G. McIntyre, vice president in charge of marketing in Texas and New Mexico, Standard Oil Company of Texas, El Paso.

Lee S. Williams, district manager for Alabama, Standard Oil Company of Kentucky, Birmingham.

Oscar E. Mitchell, sales manager, Texas & Pacific Coal & Oil Company, Fort Worth.

Tax Collections

Dropping $4,500,000 from October, federal gasoline tax collections in November were under the corresponding month of the preceding year for the first time since July, 1940, it was reported during the week by the Internal Revenue Bureau.

November collections, the bureau announced, were $31,176,356, compared with $35,711,794 in October and $38,782,347 in November, 1940.

Lubricating oil tax collections, on the other hand, reached the highest figure ever touched—$6,123,407 against $3,603,176 in October and $3,888,602 in November a year ago, and pipe-line taxes continued at a high level at $1,166,256 against $1,144,568 in the preceding month but were under the $1,252,584 of November, 1940.

The bureau's figures showed that the total of the three taxes for the current year will be well over $100,000,000 above the revenue in 1940, collections for the 11 months ended with November including $341,847,589 compared with $256,087,278 last year from gasoline; $40,945,898 against $31,757,034 from lubricating oil and $12,161,382 against $11,163,306 from pipe-line transportation.

Gulf Shipments

Water shipments from Texas and Louisiana increased slightly in November, totaling 42,639,574 barrels compared with 42,543,040 barrels in October, it was shown by the monthly report of the Petroleum Conservation Division.

Shipments from Texas were 34,396,877 barrels against 33,218,312 barrels in October, of which 30,542,510 barrels went to Atlantic Coast points and included 9,207,233 barrels of crude against 9,517,687 barrels; 6,832,162 barrels of fuel oil against 5,495,414 barrels; 2,520,224 barrels of gas oil against 3,014,258 barrels; 9,227,277 barrels of gasoline against 9,632,082 barrels; 629,163 barrels of lubricating oil against 493,703 barrels; 2,081,472 barrels of kerosene against 1,800,251 barrels, and 44,979 barrels of miscellaneous products against 27,892 barrels.

In addition 244,582 barrels of fuel oil, against 171,859 barrels in October, and 202,488 barrels of gasoline, against 140,922 barrels, were shipped by tanker to Gulf Coast points.

Tanker shipments to Atlantic foreign ports were 514,180 barrels against 325,761 barrels, including 156,771 barrels of crude against 71,701 barrels; 188,862 barrels of fuel oil against 75,396 barrels; 87,409 barrels of gas oil against 22,289 barrels; 37,265 barrels of gasoline against 156,375 barrels; 40,536 barrels of lubricating oil against none, and 3337 barrels of kerosene against none, and 62,829 barrels of gasoline were shipped to Gulf foreign ports against 55,029 barrels.

Shipments to United States Territories were 184,592 barrels against none in October, consisting of 69,487 barrels of fuel oil, 56,117 barrels of gas oil and 58,988 barrels of gasoline.

Barge shipments from Texas included 626,001 barrels to Atlantic ports against 617,382 barrels in the preceding month, including 9514 barrels of fuel oil against 4387 barrels; 49,081 barrels of gas oil against 27,329 barrels; 485,388 barrels of gasoline against 542,824 barrels, and 82,018 barrels of kerosene against 42,842 barrels.

Shipments to Gulf Coast ports were 1,692,650 barrels against 1,658,495 barrels, consisting of 120,628 barrels of crude against 96,743 barrels; 76,029 barrels of fuel oil against 148,399 barrels; 11,736 barrels of gas oil against 11,641 barrels; 1,389,836 barrels of gasoline against 1,322,272 barrels; 14,359 barrels of lubricating oil against 8093 barrels, and 80,062 barrels of kerosene against 71,347 barrels.

A total of 327,045 barrels were shipped to Mississippi River ports, including 4151 barrels of gas oil, 300,128 barrels of gasoline, 5915 barrels of lubricating oil and 16,851 barrels of kerosene; October shipments were but 228,604 barrels, all gasoline.

Louisiana Shipments

Louisiana shipments dropped to 8,242,697 barrels from 9,324,728 barrels in October, it was reported. Tanker shipments to the Atlantic Coast 2343, 2,881,033 barrels against 3,235,104 barrels, consisting of 1,963,944 barrels of crude against 2,103,869 barrels; 184,665 barrels of fuel oil against 174,033

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War Comes to Industry On Pacific Coast

WAR came to the Pacific Coast December 22 when vessels of the Pacific tanker fleet took to the high seas in the coastwise oil trade. Within a few hours six vessels had been attacked by enemy submarines, four of them driven to port, two sunk. The known casualties were five seamen dead and five wounded.

Significantly, in the first nine known Pacific Coast attacks on merchant vessels, six were tankers. The implication is obvious. Tankers on the Pacific Coast are as important a target as in the Atlantic convoys.

Impact of war in the Pacific on the California petroleum industry may be severe before many months, the first blow having already struck at its tanker fleet. The extent to which the industry's activity in the Pacific area will be effected by enemy sinkings and attacks on tankers will, of course, be in direct ratio to the effectiveness of such attacks. Dislocation of the Pacific tanker fleet carries immediate possibility of disrupting production schedules in those fields, of which are quite a number, which depend upon tankships for moving their production to refining centers. There is a possibility that a transportation bottleneck may develop in the Pacific northwest marketing operations, dependent largely upon tanker movements, and rationing may be necessary before long. The Pacific northwest market has been consuming 130,000 barrels of petroleum products daily, and before tanker diversions to the Atlantic some 50 ships were engaged in this service.

Developments over the next few weeks likely will indicate the extent to which oil transportation will be impaired in this area. Meanwhile steps are being taken to protect fields and plants from naval shelling, bombing and other acts of war.

With the sinking of the General Petroleum Corporation tanker Emidio off Cape Mendocino, 200 miles north of San Francisco, five men were killed and five wounded. Fortunately, no casualties occurred in the shelling of the other vessels, or the shelling and torpedoing of the Union Oil Company tanker Montebello off Estero Bay, 100 miles north of Santa Barbara, the second tankship to be sunk.

No information has been released of steps to be taken to safeguard the movement of tankers along the Pacific Coast, as all such ship movements are understood to be in the hands of the Navy Department. Effective measures will undoubtedly be taken, however, to insure the safety and protection of both tankers and crews. While such movements may be disrupted and unpredictable for the duration of the war, so long as ships are available they are expected to be used in the coastwise service supplying the Pacific Northwest, Alaska, and the interchange of products between San Francisco Bay and the Los Angeles refining centers. Also oil must be moved from this region to fighting forces in the Far East.

Tankships attacked, in addition to the two sinkings, included the Standard Oil Company of California's H. M. Story, Richfield Oil Corporation's Aguiworld and Larry Doheny, and The Texas Company's Texas.

Protective Machinery

The loss of life on the Emidio brought home to the California oil industry the reality of war. For many months a state-wide defense committee headed by Governor Olson has been actively preparing for war in the Pacific. Under the State Council for Defense are ten functional committees, one of which is designated as the Industrial Resources and Production Committee, this latter committee headed by F. E. Foster, managing director, California Oil & Gas Association. There are 12 active subcommittees under the Industrial Resources and Production Committee, one of which embraces the state's oil industry and which is headed by Dana Hogan, an independent producer and president of the San Joaquin Valley Oil Producers Association.

Since the outbreak of war, rapid strides have been made to implement the defensive machinery within the industry to protect installations, particularly fields, refineries, tank farms and docks on tidewater. In this work the committee under Hogan functions as a coordinating group for the industry as a whole. Another important committee has also been established to direct and coordinate the protection of fields in the coastal areas in particular as well as those farther inland. A. C. Ruble, vice president, Union Oil Company, is chairman of this group.

Fields Open to Shelling

Several important California fields are open to shell fire from naval vessels and defensive arrangements for these fields have been given preference. Every field vulnerable to attack has been organized to meet any emergency. These arrangements are geared to function on a 24-hour basis under the direction of three men selected for each field, one of whom is always on duty, constantly in touch with conditions within his own area, as well as civil and military defense personnel elsewhere.

Complete instructions have been given governing the procedure in each area in the event of attack by bombers, offshore naval vessels or sabotage within the field. In the event of attack and damage from any source, defense crews on the job have full information on equipment available to fight fires, repair damage, and know the source from which to take orders and directions. Organization work within each field is the responsibility of the particular field. The committee headed by Mr. Ruble is primarily a coordinating group, set up to distribute information on methods of

handling various problems, coordinate activity between different fields and generally to act as a clearing house for ideas and to solve such problems as transportation of men and materials between fields and to fields during blackouts.

Each field is being asked to determine the additional equipment that may be required if it is not already immediately available, and to pass any requests along to this inter-field committee. Ruble's committee is also collecting and distributing instructions on fighting incendiary bombs, explosive bombs, delayed action bombs, effecting camouflage, and other matters.

The operator in each field communicates with his own field committee defense head for any information he may desire as to the best means of protecting a Christmas tree from bombs, camouflaging storage tanks, or following out any defense order issued to the field.

On matters directly threatening the safety of a field, the defense head in the field must first exhaust all resources to take care of his own situation, thereafter he has recourse to local police, the county sheriff, the state guard and federal military establishments in the order named.

Under this system each company or individual operator is required to police his own property, coordinating his efforts with his neighbors, and only in the event of an emergency is outside help available from municipal, county, state or the military establishments.

All areas adjacent to military or naval establishments, or a part of such establishments, however, are under the direct jurisdiction of army or navy authorities. The military branches are not interested in protective work in other areas unless a condition should develop beyond the control of local authorities.

Since December 7 a great deal of work has been completed in building protective devices in exposed areas. This has taken the form of sand-bagging Christmas trees, elimination of derrick lighting, removal of reflective paints on tanks and other equipment, and in general camouflaging operations as much as possible.

Operations under blackouts are a primary problem of refineries. A complete shutdown would appear to be the only effective means of blackout for such plants. Fortunately, there are no burning flares in any California field so all producing activity could continue uninterrupted during an enemy air raid so far as blackouts are concerned.

SHAKE-OUTS
From The News

Last week the number of producing wells in Texas rose to 99,049, and at the average rate of increase the state should have 100,000 early in March. Thus Texas has one fourth of the oil-producing wells in the United States and is steadily increasing its percentage. Pennsylvania has about 83,000, Oklahoma 54,000 and Ohio 26,000. All other states have less than 25,000.

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Horsecars probably never will stage a comeback in the United states as they have in power-poor parts of Europe, but already national defense requirements have made it necessary in some southeastern regions to replace electric lighting in many non-essential jobs with kerosine lamps. Drought-starved generating plants, called on for large additional electric current because of defense jobs, have been unable to furnish all the power needed for ordinary civilian use. Ingenious proprietors quickly turned to kerosine lamps for ornamental, sign and show window lighting.

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The army is experimenting in refueling tanks by air, dropping gasoline in sausage-like rubber bags.

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Oil men throughout the nation have been asked to collect as soon as possible all scrap iron and steel in oil fields and refinery yards, and to dispose of it at once through normal trade channels for use in steel manufacture.

The Iron and Steel Branch of the Office of Production Management has addressed this request to the oil industry, reporting that an acute shortage of scrap has been felt particularly by Navy mills and foundries doing important national defense work. OPM urges that "every producer, refiner, and marketer collect and dispose at once of all available scrap, and of all obsolete and abandoned equipment."

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Roughnecks, roustabouts, drillers, helpers and other oil field workers are going back to school in large numbers in classes sponsored by the United States Department of Education and the state vocational training authorities. Nearly 5000 of them attended classes in the 1940-41 scholastic year, the American Petroleum Institute reports, and about half were awarded certificates. The courses range from elementary subjects to studies such as instrumentation, drilling methods, absorption plants, and insecticide chemistry. A total of 257 petroleum vocational training classes met through most of the year at 101 schools or centers. The 4860 students enrolled came from 369 different oil companies or divisions of companies. With a number of classes not completed, awards of certificates totaled 2304.

Washington Roundup

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barrels; 313,791 barrels of gas oil against 161,269 barrels; 116,850 barrels of gasoline against 290,617 barrels; 70,595 barrels of lubricating oil against 95,288 barrels; 215,633 barrels of kerosene against 394,675 barrels, and 15,555 barrels of miscellaneous products against 15,353 barrels. Also by tanker, 873,103 barrels of crude were shipped to Gulf Coast ports against 905,386 barrels in October.

Barge shipments to Atlantic Coast destinations were 294,024 barrels against 270,570 barrels in the preceding month, consisting of 3980 barrels of fuel oil against 8191 barrels; 59,289 barrels of gas oil against 8292 barrels; 189,912 barrels of gasoline against 206,673 barrels; 22,193 barrels of kerosene against 15,812 barrels, and 18,650 barrels of miscellaneous products against 31,602 barrels. Shipments to Gulf Coast ports were 3,196,947 barrels against 3,671,016 barrels, consisting of 2,975,808 barrels of crude against 3,417,963 barrels; 26,474 barrels of fuel oil against 47,527 barrels; 35,654 barrels of gas oil against 30,112 barrels; 145,903 barrels of gasoline against 145,546 barrels; 6368 barrels of kerosene against 9120 barrels, and 6740 barrels of miscellaneous products against 6741 barrels. Shipments to Mississippi River ports were 997,590 barrels against 1,193,007 barrels, consisting of 28,273 barrels of fuel oil against 48,638 barrels; 82,463 barrels of gas oil against 60,861 barrels; 743,063 barrels of gasoline against 978,609 barrels; and 142,296 barrels of kerosene against 96,804 barrels.

Backwash by Gas Lift Increases Efficiency of Salt Water Injection

By GORDON B. NICHOLSON, Staff Writer

CONFRONTED with an operating obstacle which required cleansing the formation face of salt-water-injection wells to keep the pores open and uncontaminated by undisolved solids or turbid water, Shell Oil Company, in the Roanoke field of Coastal Louisiana, installed a tubing string equipped with flow collars to permit backwashing by gas lift. Favored by presence of a shallow salt-water-bearing sand which receives the injection water under a vacuum, the company periodically augments infiltration by applying pressure from a nearby gas well into the tubing, flushing water through the casing to the salt-water pit, carrying accumulated sand and residue from the formation face. Washing action expurgates the receiving formation, opening pores and removing materials which deter movement of input water into the sand.

Production from the water-driven Roanoke field is obtained from several sands at depths ranging from 6250 to 8850 feet. Discovered in May, 1934, by Shell Oil Company's Kratzer 1, the field comprises 900 producing acres and 23 wells. Natural water encroachment displacing the oil and gas withdrawn from the field results in production of large quantities of water in many wells, and in recent months proper disposal became a troublesome question. Presence of a porous and permeable section of Miocene sand at approximately 3700 feet, with insufficient bottom-hole pressure to sustain a full hydrostatic head of salt water, provides ample outlet for the fluid, and the company's Carter 1, located on the northeast edge of the field, was selected as the input well.

Drilled originally to deeper formations, Carter 1 was plugged back to the Miocene levels, and the casing perforated liberally throughout the region to allow egress of large quantities of water without excessive pressure requirements. Three thousand feet of 2½-inch tubing were run into the well, with four jet collars, each with a drilled ⅛-inch orifice, spaced at 1000, 1500, 2000 and 2500 feet, and 500 feet of tail pipe extending below the bottom flow collar. Top of the tubing was swaged to connect directly with a 2-inch line which was laid to the gas well. Into opposite sides of the casinghead, 4-inch pipes were connected, joining at a tee before swaging for tying into the 6-inch line conveying salt water from the storage reservoir.

Injection Water Treated

As is the case with the majority of disposal systems, water is subjected to treatment prior to its injection into the formation. The receiving sand must necessarily be porous, demanding removal of foreign particles or other objectionable materials in the water to prevent clogging its faces and retarding entrance of injection water, otherwise the natural advantage of water injection by gravitation is sacrificed. Many solids precipitate when allowed, and others are removed by aeration and with the aid of filters.

Water is collected in gunbarrels at the various tank batteries and drained by gravitation to an earthen central storage reservoir to allow exposure to the air and settling of solid particles. The pit covers an area more than 200,000 square feet, and, despite shallow depth, has a capacity of over 120,000 barrels. A large surface of the water is exposed, allowing thorough aeration and opportunity for evaporation, as well as permitting all heavier solids to precipitate. The vast quantities which the pit is capable of storing also assures considerable time for backwashing the input well when necessary, without risk of overflowing despite continual addition of water from the lease gunbarrels.

From the pit, all subsequent movement of water is confined within an extended line made of 6-inch drill pipe, with tool joints removed and ends welded. The thick walls of the pipe offer protection against the corrosive salt water and prevent damage to the line by trucks or by dropping heavy equipment.

The most troublesome element to remove from the water is iron oxide, which, reduced from a fer-

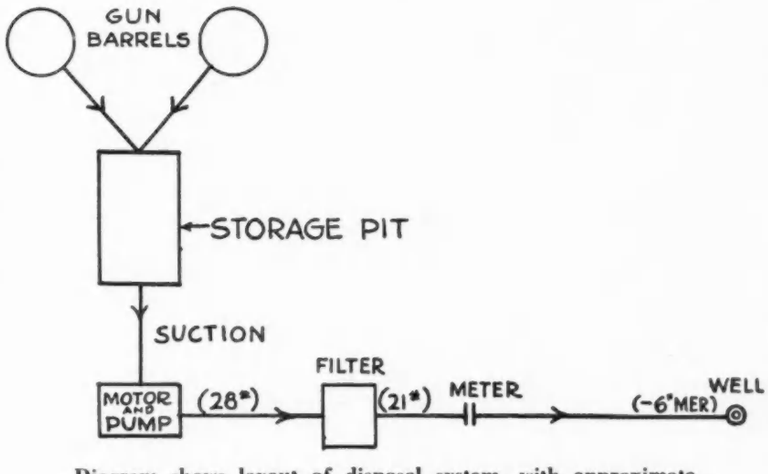
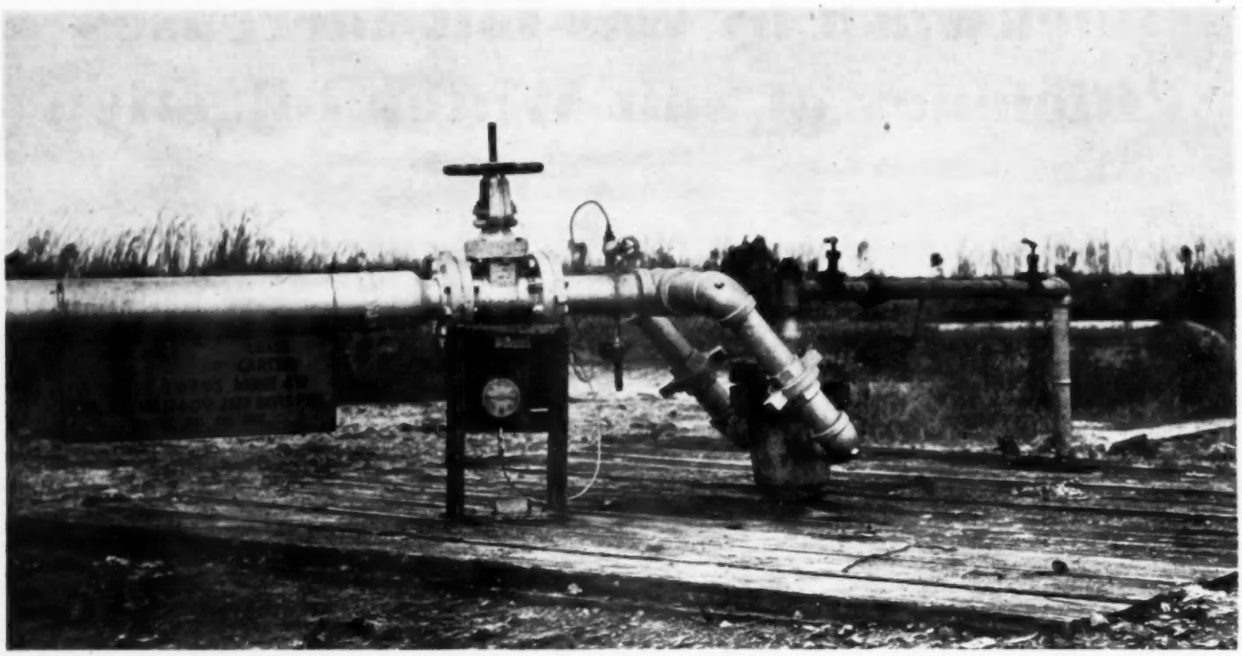
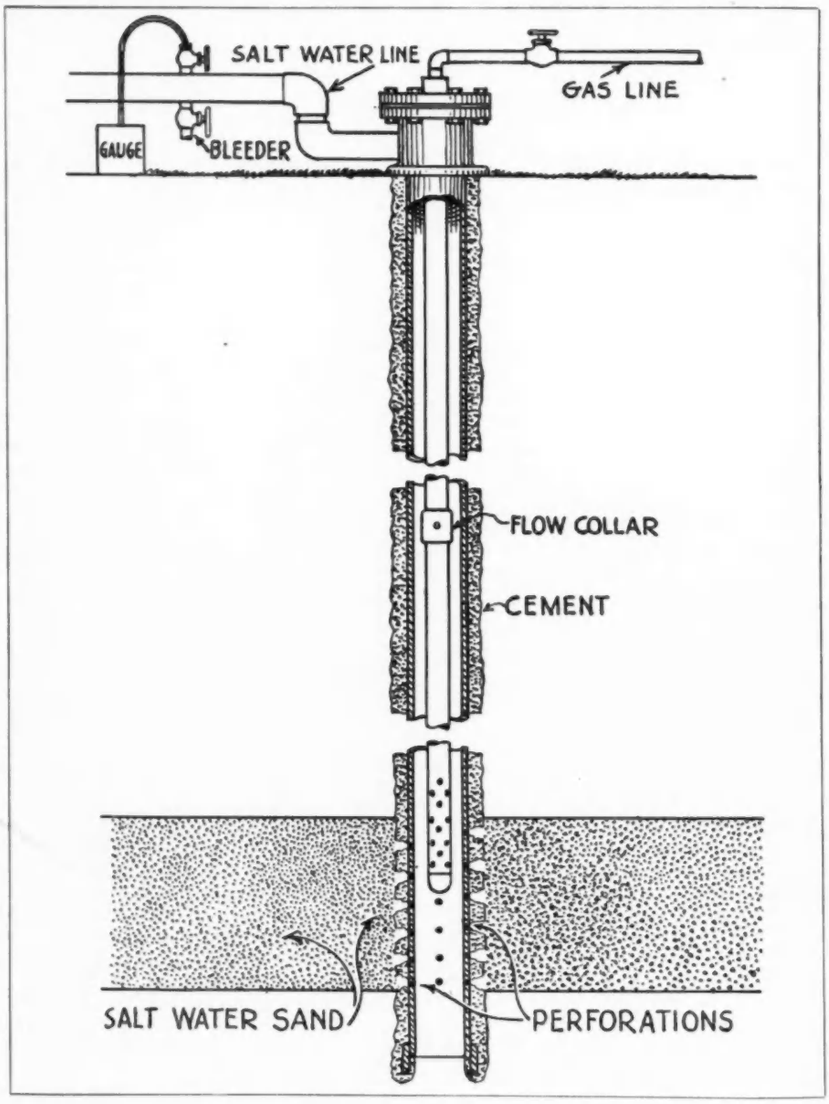


Diagram shows layout of disposal system, with approximate pressures on lines at various points.



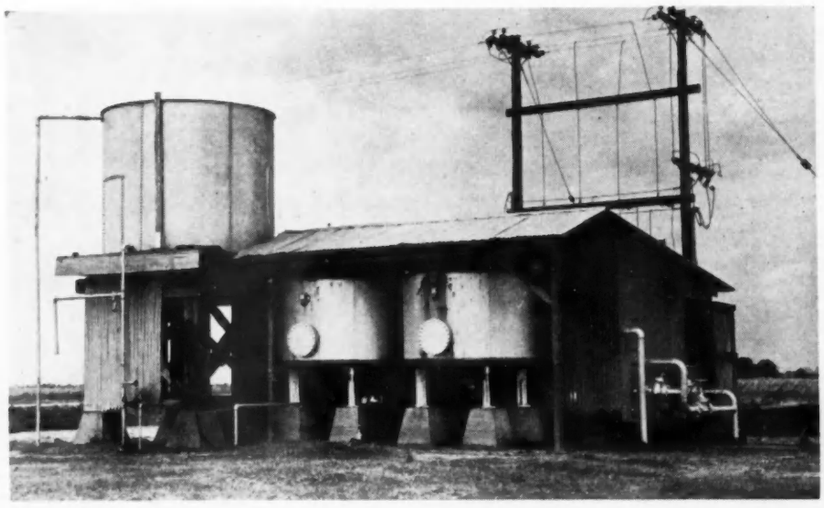
Carter 1, salt-water-injection well of Shell Oil Company, provides convenient disposal for 8000 barrels of water daily in the Roanoke field. The tubing is equipped with drilled collars and connected with a gas well to permit backwashing the formation of accumulated residue by gas lift.



Salt water is injected into casing (below) for input into receiving formation. Tubing is permanently connected with gas well for backwashing, flow facilitated by four flow collars on the tubing string.

rous to a ferric state by aeration, is insoluble but reluctant to precipitate. Experiments shows that this substance, when a solution is allowed to pass through a sand core, is caught on the face of the sand, and clear water filters through. Such experiments also show that iron oxides do not penetrate into the sand, but stick chiefly on its face, to account for plugging the formation pores in input wells. This has been determined in actual wells by washing, with water removing the deposited oxides from the formation and re-opening the sand for injection.

As a result of these experiments, Shell Oil Company filters all salt water before injection to remove iron oxides and other solid particles, using a graded sand filter. Only one pump is employed to transfer salt water from the reservoir to the filter. This consists of a high-pressure centrifugal pump propelled by a V-8 engine operating on natural gas and erected on a concrete floor inside a



Pump lifts water from central pit for treatment by filters before injection. Corrugated iron building houses pump and engine, with filters under shed outside. Auxiliary electric motor and pump are serviced by power line on lease.

small corrugated iron pump house. An auxiliary electric motor and pump are provided and are used when desirable, served by a power line in the field and by transformers located near the pump house. Water for the engine is provided by an elevated storage tank situated outside the house and supplied by a water well, water draining into the engines when demanded. Under a shed connecting with the house, space is afforded for two sand filters mounted on concrete blocks and through which the entire volume of injection water is pumped.

The pumps pull a suction on the line from the water pit, lifting the salt water through the 6-inch line and forcing it into the filters under pressure of about 28 pounds. A pump-primer is provided by a short 1-inch nipple welded to the pick-up pipe and equipped with a gate valve. After shut-down periods, it is often necessary to fill the pipe with water through the primer to start water movement toward pump. Iron oxides and insoluble carbonates which have not been previously removed are extracted during passage through the filters, and the solids are deposited on the face of the graded sand.

A pressure drop approximating 7 pounds occurs at the filters, and the remaining 21 pounds are exerted to flowing the fluid through the line to the injection well 3000 feet distant. A meter on the 6-inch line measures the volume of water directed to the well, providing accurate and permanent records for determining efficiency and performance of the disposal system.

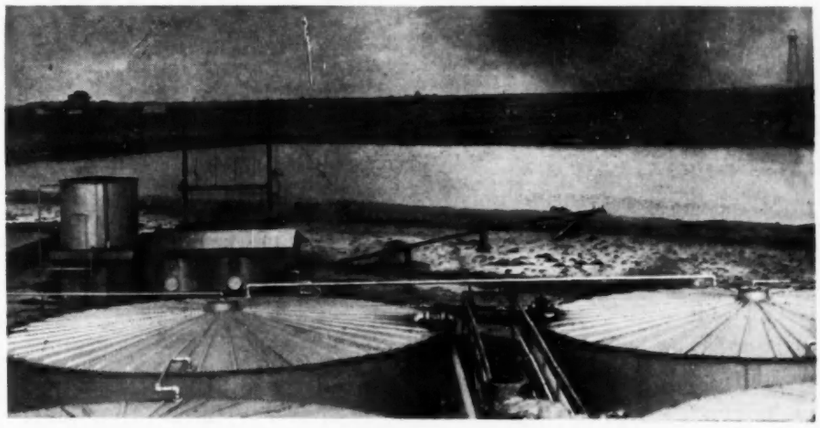
Pipe to Well

The heavy-walled pipe conveys the salt water over level ground, conducive to rapid flow despite the low pressure applied. Before junction with the injection well, the line is swaged to 4 inches and divided for a double connection with opposite sides of the casinghead. A ½-inch bleeder is provided at the well to sample the fluid being injected, and a small tube attached to a gauge gives visual reading of the pressure or vacuum under which water enters the well. Under normal operating conditions, the line at this point records a vucuum of 5 or 6 inches of mercury, and resistance to flow is minimized by injection into the casing instead of the tubing.

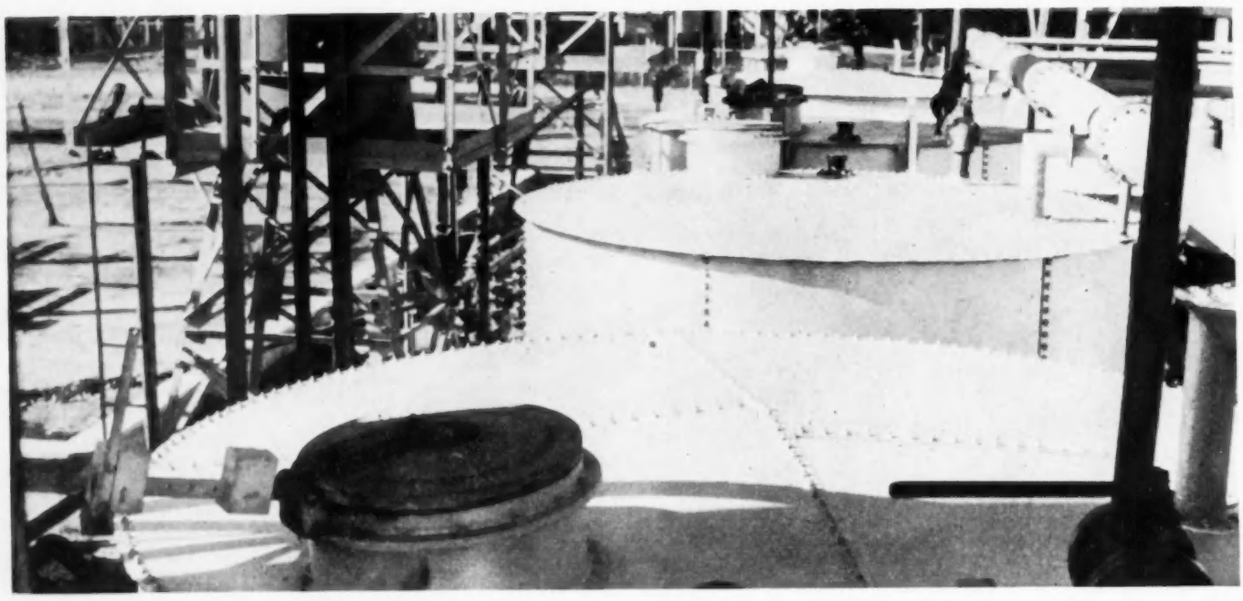
After a period of operation, a gradual decline in vacuum at the well head indicates that the formation is no longer taking the water as freely as under normal conditions, usually attributable to a partial sealing of the face by deposition of solids including iron oxides formed by the corrosive water passing through the steel pipe, the natural tendency to react aggravated by aeration. Continued injection would further reduce the vacuum and necessitate additional pump pressure to increase the hydrostatic pressure applied against the formation.

To prevent complete clogging of the sand face, water injection is temporarily suspended while the formation is cleaned by backwashing. Already permanently connected with the gas well, gas is admitted readily to the tubing, circulating the water from the casing back into the pit and washing the filters by the reverse circulation. In this manner, the sealing solids and accumulated sands are quickly washed from the well, opening pores to facilitate further injection. Water from the gunbarrels, in the meantime, continues to empty into the reservoir.

In this area where evaporation and annual rainfall are not widely variant, the injection system affords a satisfactory method of salt-water disposal. Backwashing by gas lift furnishes a convenient and effective means to maintain operating efficiency of the input well and the disposal system provides outlet for 8000 barrels of water daily. According to company engineers, ability to dispose of such large quantities of water enables the operators to materially enhance both daily and ultimate recovery as prolific volumes of fluid must be handled to prevent damage to wells by salt water encroachment which may, if allowed to accumulate, seriously curtail normal movement of oil.



Portion of the large salt water reservoir which stores the fluid temporarily for aeration. Many solids precipitate while in the pit, and others are removed by sand filters.

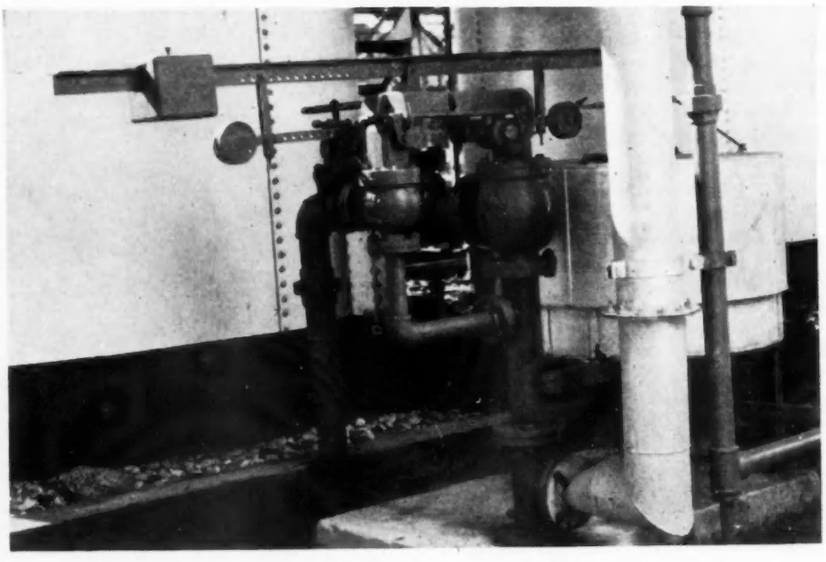


Instrument for controlling the tank pressures at predetermined levels

Complete Flow-Tank Vapor-Recovery System

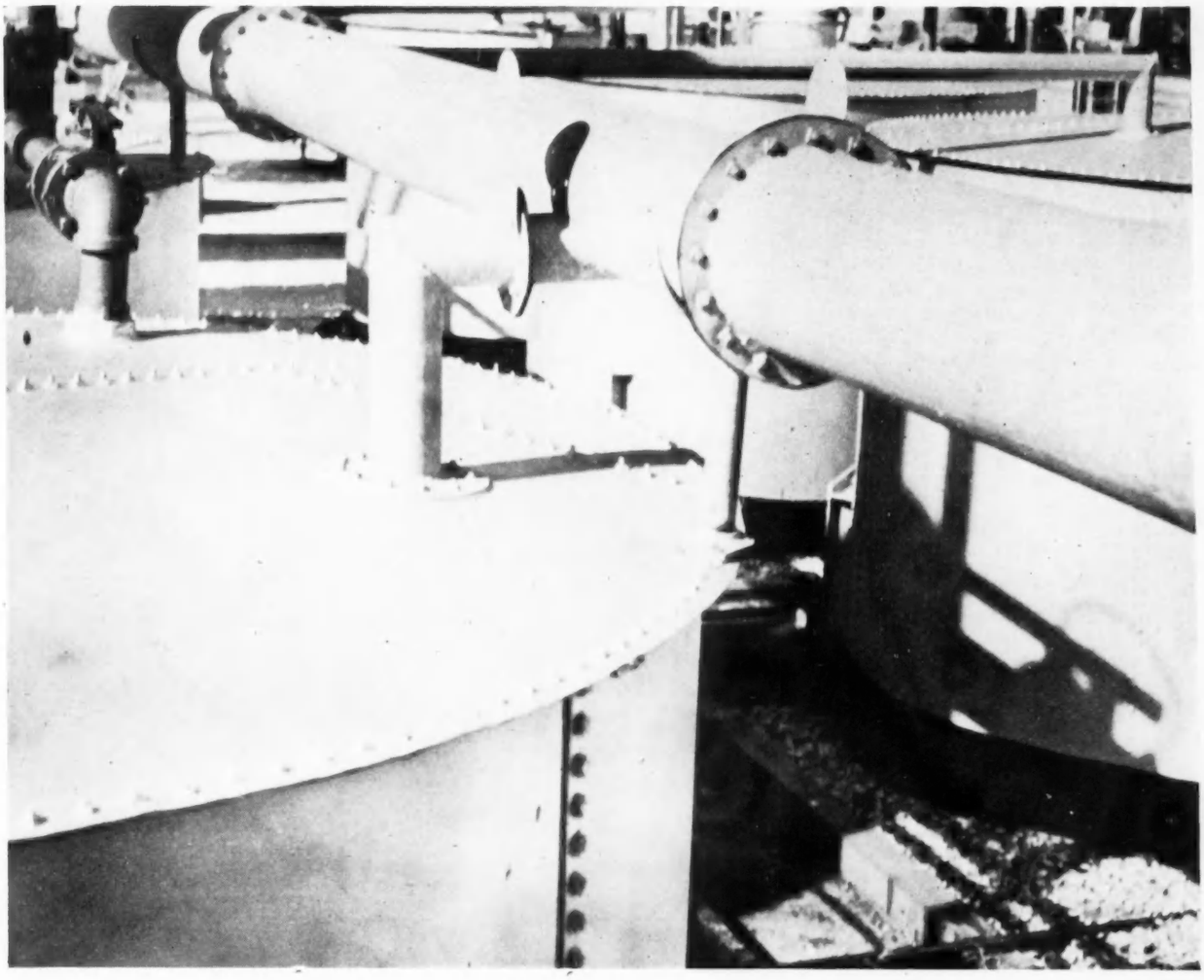
A VAPOR saving system used by one of the larger oil companies in the Long Beach Harbor-Wilmington oil field provides freedom of passage of vapors from one tank to another to compensate for the variation in pressure while one or more are being filled and others being emptied. This is accomplished without infiltration of air into the battery or loss of vapors. The system is separate from the traps on the wells, but the vapor recovered from the tanks is fed into a gathering system which conveys the gas to a gasoline plant.

Town-lot locations and complicated royalty interests make it necessary to equip many individual wells with separators, but as measurement of both oil and gas is accomplished with approved meters, grouping of separators and flow tanks at convenient centralized



Looking across battery of tanks and showing installation of separators at centralized site.

points permits this type of vapor-saving equipment to be used. Each well and its separator are furnished with at least two flow tanks. The vapor system is connected to all discs from sheet metal and welding to the end of pipe designed for connections. Gaskets and small bolts are used for making up joints. Provision is made at each tank connection for shutting off with blind plates which can be slipped into the flanged connections after a few bolts are removed.



Light weight galvanized iron pipe vapor lines are supported by posts attached to stock tank roofs

the tanks in the battery and contains equipment and control instruments to maintain a predetermined pressure on all tanks alike.

Galvanized sheet iron pipe is used for the vapor lines on the tank battery. Such light weight pipe can be used for this purpose since neither the pressure or vacuum is great. The light weight permits the pipe to be mounted on the roof of tanks, supported by posts bolted to the roof or sides.

Mitre-cut connections used at turns are welded with a light torch and small rods, and connections to main headers is made with flanges. These flanges are made by cutting

Pressure, either above or below atmosphere is maintained with delicately balanced instruments on the outlet of the main header at the point where it is connected to the gas-gathering system. These instruments are connected to ordinary pipe down-stream from the sheet metal pipe of the tank system and respond to slight changes in pressure so that, if a pressure approximating atmosphere is desired for the tank battery, the adjusting mechanism can be changed or balanced to maintain this pressure within the limits of the carrying capacity of the pipe lines. As an outside protection which is designed to function if pressures fluctuate widely, automatic, balanced thief hatches are installed to the roof to release excessive volumes of gas or break a vacuum.

In order to reduce the cost of manufacture of the light sheet metal pipe on the battery, uniform sections are made for flanging together. Following a tank battery plan and using tanks all of a size, and spaced at like distances from each other, the vapor system used at one battery of flow tanks can be moved and attached to another battery without cutting or changing the design or size of any of the equipment employed.

Modification of Permeability Measurements

By H. KRUTTER and R. J. DAY
School of Mineral Industries, The Pennsylvania State College
State College, Pennsylvania

NUMEROUS investigators have noted the discrepancy between liquid and air permeabilities. In practically every case the liquid permeability was less than that obtained when air was used as a flow medium. This discrepancy was attributed to the fact that there is a swelling of the clay-like materials coating the sand grains when water is used as a flooding medium.

Klinkenburg, in an excellent paper on "The Permeability of Porous Media to Liquids and Gases" (presented at the Eleventh Mid-Year Meeting of the A.P.I., at Tulsa, Oklahoma, May 22, 1941), has examined this discrepancy between liquid and gas permeabilities in convincing detail. His investigations have shown "that the permeability to a gas is a function of the mean free path of the gas molecules, and thus depends on the factors which influence the mean free path such as pressure, temperature and the nature of the gas. Therefore, when the mean free paths are small, e.g., at high pressures, the permeability to gas should be expected to approach that of liquids."

Klinkenburg showed that permeabilities, as ordinarily measured using air, varied depending upon the mean pressure used in the measurements. The higher the mean pressure used, the lower the calculated value of the permeability. This variation is most striking for low permeability cores, and decreases with increasing permeability. At very high mean pressures (essentially infinite mean pressure) and low differential pressures so that there is no question of turbu-

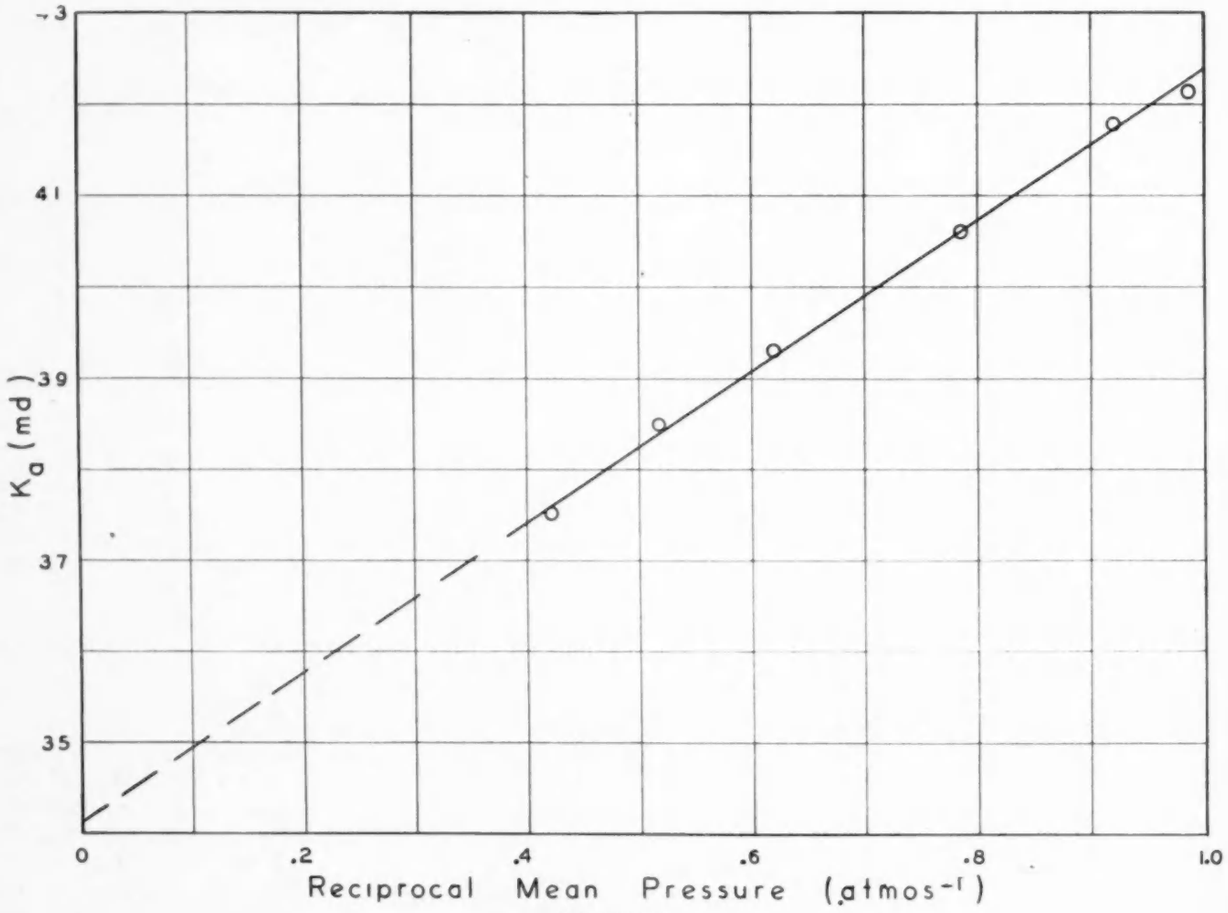
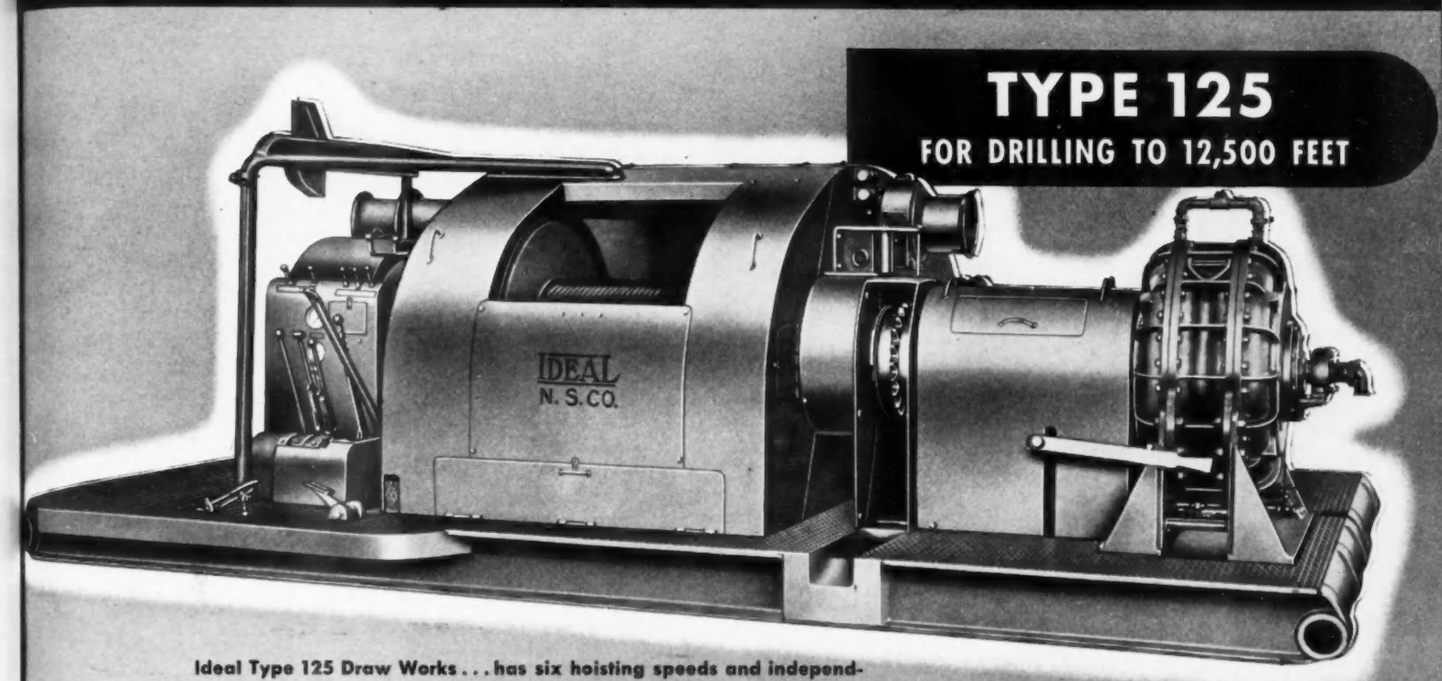


FIGURE 1
K_a vs. Reciprocal Mean Pressure for a Venango Second Sand Core

THE VERY *Latest* EQUIPMENT, FEATURING *Air-Operated* FRICTION CLUTCHES WHICH PROVIDE *Easy* CONTROL AND *Maximum* FLEXIBILITY FOR *All* HOISTING AND DRILLING OPERATIONS



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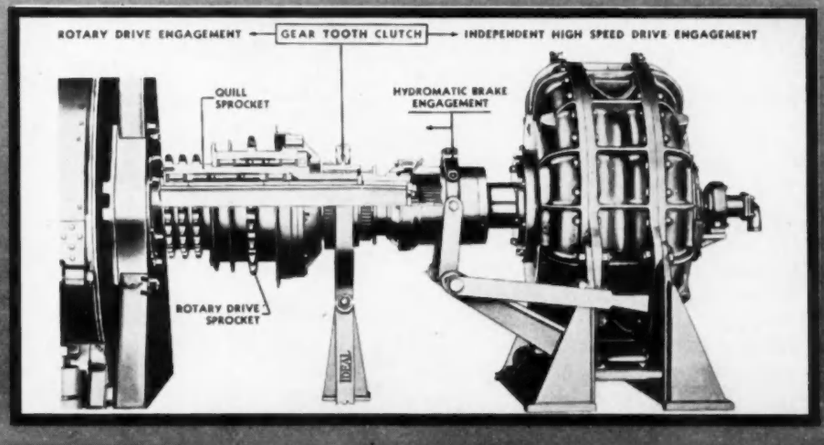
Note ingenious arrangement at end of Type 125 Draw Works drum shaft, with sliding gear tooth connection to the rotary drive, independent high speed drum drive, and hydromatic brake.



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lence, the value of the permeability as determined using air agrees with the permeability obtained using various liquids. In his work care was taken that the question of swelling did not enter the picture. The large differences obtained between the liquid permeability and the air permeability as ordinarily determined indicate that the swelling of clays does not play as important a role as was once thought.

The procedure for determining the permeability of porous media as recommended by the A.P.I. (A.P.I., Code No. 27, First Edition, October, 1935) must be modified. Permeability determined with air varies inversely with the mean pressure. By using the procedure suggested by Klinkenburg, we will obtain a permeability (K) which will depend only on the geometry of the cores and not on the flowing medium (assuming no clay swelling when water is used as a flow medium).

Klinkenburg's results are briefly summarized by the equation

$$(1) \qquad K_a = K\left(1 + \frac{b}{p_m}\right)$$

where K_a is the permeability obtained with air at a mean pressure p_m. The constant b depends on the pore pattern of the core and decreases with increasing permeability. K will be our new defined permeability and will also be the permeability which we should obtain if liquids were used as flooding mediums. The quantity which is a characteristic of the core is, therefore, K and not K_a. Inverting equation (1), we obtain

$$(2) \qquad K = K_a/(1 + b/p_m)$$

The term b/p_m may be looked upon as a correction factor and may be made negligible if high mean pressures are used (low differential pressures should also be used so that laminar flow may be assured).

For a linear sample core the air permeability is given by the equation

$$(3) \qquad K_a = \frac{1000 \neq 1}{A} \frac{Qp}{p_m \Delta p}$$

where

$\neq$ = viscosity of air in centipoises at temperature of measurement
1 = length of core in cms.
A = cross-sectional area in sq. cms.
Q = rate of flow in cc./sec. measured at pressure p
Δp = pressure in atmospheres (usually about 1 atmosphere)
$p_m = \frac{\text{inlet pressure} + \text{outlet pressure}}{2}$, in atmospheres
Δp = pressure difference (inlet pressure — outlet pressure) in atmospheres
K_a = air permeability expressed in millidarcies

A schematic diagram for the permeability measurement is shown in Figure 1. The only essential modification is the use of a needle valve on the downstream side of the core to adjust the pressure differential across the core. An accurate gauge, preferably a large mercury manometer, is placed on the upstream side of the core as indicated.

Measurements are made at several mean pressures and K_a is plotted against $1/p_m$. The slope of the line determines the value of b and the intercept on the K_a axis determines the value of K, which would be the liquid permeability of the core (providing that no swelling or change occurs in the core). To illustrate the procedure a sample calculation on a core from the Second Venango sand in Pennsylvania is shown below.

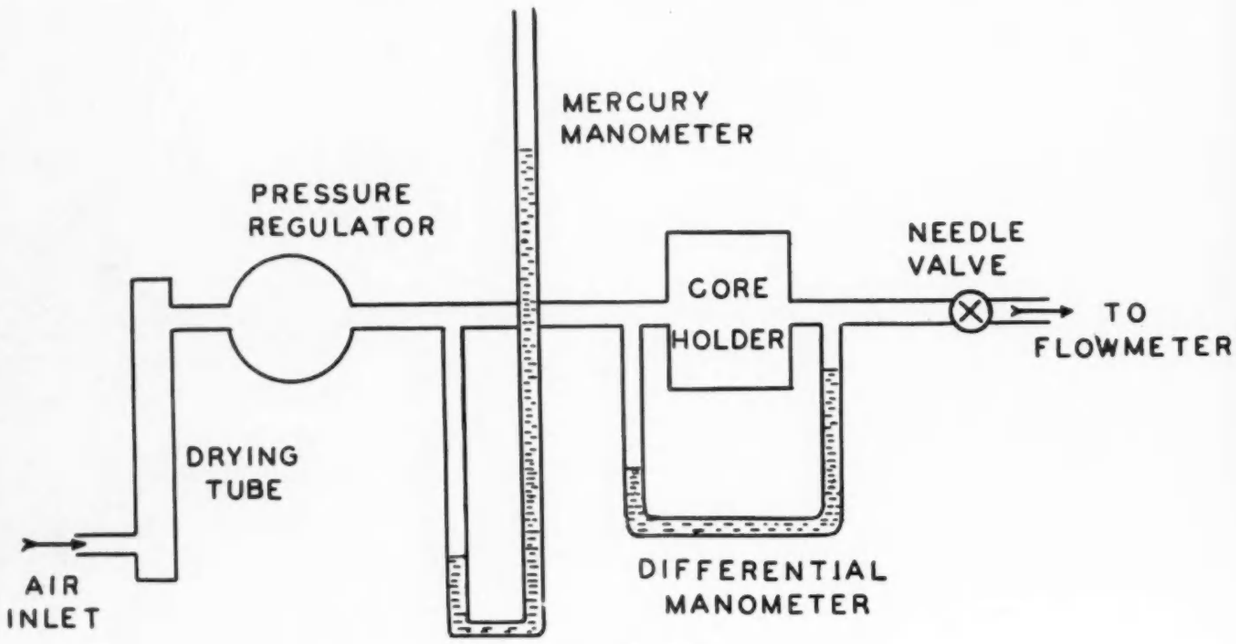

FIGURE 2
Schematic Air Permeability Apparatus

This core has a cross-sectional diameter of 1.90 cm. and is 2.37 cm. long. Therefore,

$$K_a = \frac{4 \times .0184 \times 1000 \times 2.37}{\pi \times 1.90 \times 1.90} \frac{Q\,p}{\Delta p\, p_m} = 15.38 \frac{Q\,p}{\Delta p\, p_m}$$

(taking $z = .0184$ centiposes) or $K_a = 1169\ Q\ p/\Delta p\ p_m$ with p, p_m, Δp expressed in cm. of mercury.

In Figure 2, K_a is plotted as a function of $76/p_m$ (atmos^{-1}). The ex-

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trapolated line intersects the K_a axis at 34.1 md. The liquid permeability or K value is therefore 34.1 millidarcies. The slope of this line is 8.28 and dividing by 34.1 we obtain a b value of .242. It is therefore seen that K_a for this core measured at a mean pressure of one atmosphere $K_a = 34.1\ (1 + .242/1) = 42.4$ md differs from K by 24 percent.

The constant b, as stated before, is a function of the pore pattern of the sand. Consequently, one can not expect that a unique relationship exists between the value of b and the K value of the sand. However, it is conceivable that in a given sand, b can be determined as a function of K to a reasonable degree of accuracy so that it may be used for practical calculation purposes. Figure 3 illustrates the variation in b as a function of K for 8 cores in the Venango Second sand. This plot will presumably be different for different sands. Note that for high permeability cores that the value of b is practically negligible. With the aid of such a relationship permeabilities may be determined as usual and then corrected to the proper K value.

Suppose a permeability measurement is made on a Second Venango core and the permeability to air is found to be 21.2 md at a mean pressure of 1.25 atmospheres. At a value of K of 21.2 in Figure 3 (we really do not know the correct value of K since we have measured K_a) we find a b value of .35. Therefore $K = 21.2/(1 + .35/1.25) = 16.6$ md. Our calculation is incorrect since our b value was not the correct one as we assumed a K value of 21.2 md and now we see that it is less than 16.6. Looking up the b value at 16 md in Figure 3, we find a b value of .425. Therefore, repeating the calculation our next estimate of K will be $K = 21.2/(1 + .425/1.25) = 15.8$ md. This will be as close to the correct value of K as will be desired since the b value corresponding to $K = 15.8$ is .43 and a repetition of the calculation will lead to $K = 21.2/(1 + .43/1.25) = 15.8$ md.

In Figure 4 a nomograph is given which should be useful in making the above calculation. The chart is valid for every sand as it is simply a chart of the equation $K_a = K\ (1 + b/p_m)$.

P_m (cm. Hg.)	$\triangle P$ (cm. Hg.)*	P cm. Hg.	Q cc/sec	$Qp/\triangle p\ p_m$ cc/sec/cm. Hg.	K_a (md)	$76/p_m$ (atmos^{-1})
77.34	3.318	73.36	.1261	.03605	42.14	.9827
82.26	3.464	73.36	.1388	.03575	41.79	.9239
97.44	3.922	73.35	.1809	.03473	40.60	.7800
121.8	3.172	73.36	.1771	.03362	39.30	.6240
146.0	3.387	73.36	.2218	.03292	38.48	.5206
178.2	2.817	73.36	.2195	.03209	37.51	.4265

* Actual $\triangle p$ was measured in cm. of H_2O.

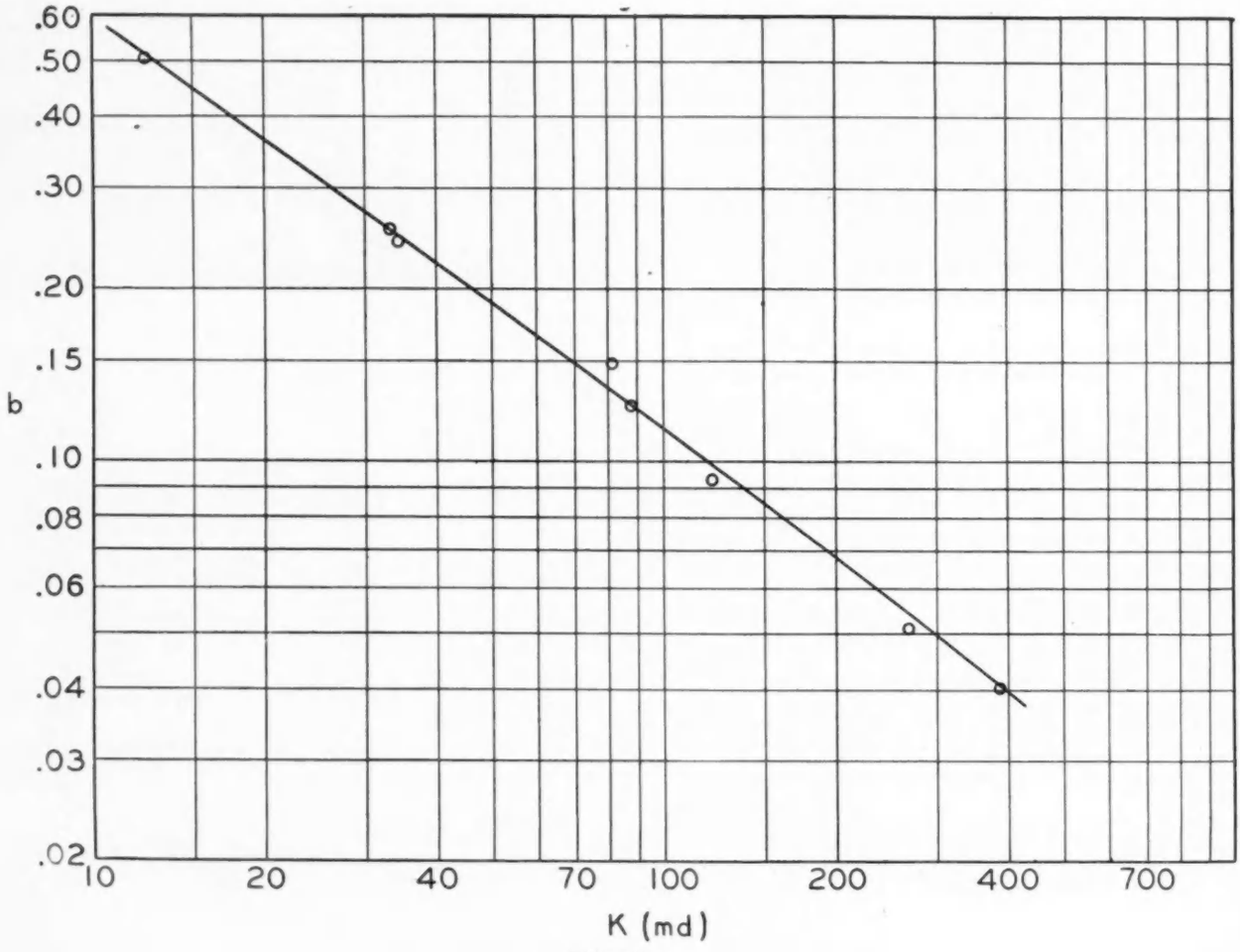

FIGURE 3
b vs. K for Venango Second Sand

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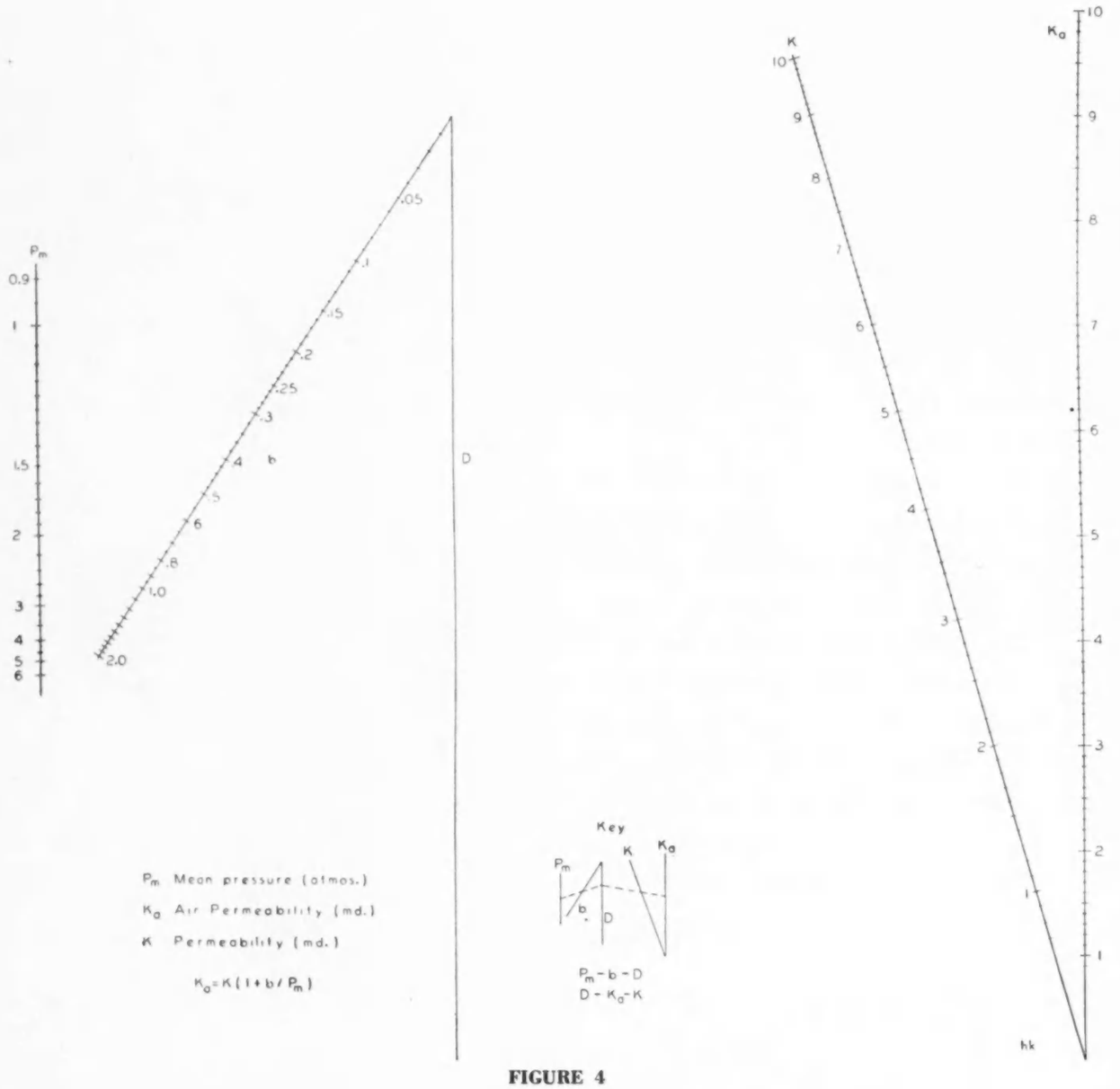

FIGURE 4

Connect .35 on the b scale with 1.25 on the p_m scale until it intersects the dummy scale D, then connect this point with 21.2[1] on the vertical K_a scale, this line will cross the K scale at 16.6 md. The procedure is again repeated using the new estimate of b, namely, .425. b = .425 is connected with $p_m = 1.25$ to the dummy scale D. A line is then drawn from this point to 21.2 on the K_a scale intersecting the K scale at 15.8 md.

[1] It will be noted that the K and K_a scales are calibrated from 0 to 10 md. The same calibrations are valid for 0 to 1 md., or 0 to 100 md., or 0 to 1000 md. If the K_a scale is multiplied by a constant, the K scale will be multiplied by the same constant. Therefore, this chart is useful for any desired range of permeabilities. For a given sand the b scale could be changed so as to incorporate Figure 3 (or a corresponding b vs. K scale for another sand).

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"Z" NICKEL	Cold-drawn, as drawn	160-190	120-150	20-7	300-380	25
"R" MONEL	Castings as cast	80-115	50-100	35-15	150-230	99
"S" MONEL	Cold-drawn, as drawn	110-145	80-115	4-1	275-350	9-3
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*Specimen completely fractured.

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Design of Casing Strings

By EMORY N. KEMLER
Associate Professor of Mechanical Engineering, Purdue University

Tension Release in Casing Strings

PART 5

IN PART I of this series of articles (published December 1, 1941), it was pointed out that a decrease in temperature of the casing string or an increase in internal pressure would result in an increase in tension in the string after the cement has set. In some cases tension failures both of pullout and fatigue type have occurred. It has been contended by some that a release of tension after the cement has set would eliminate these failures. Since it is physically impossible to measure stresses and observe load changes down the string, it is difficult to determine the actual cause of such failures. This article gives charts aid methods by which the amount of load and tension to release for a given set of conditions can be calculated.

When the combination of initial tension and increase in tension due to temperature decrease or pressure increase exceeds the pullout strength of the joint, failure will obviously occur. If the above combination of stresses does not exceed that required to cause pullout, failure can occur due to fatigue provided a variation in stress occurs. This variation in stress can occur because of whipping of the drill pipe. The magnitude of these stresses is indeterminate. The fact that some failures occur by fatigue indicates that the drilling operation introduces in some form, variations

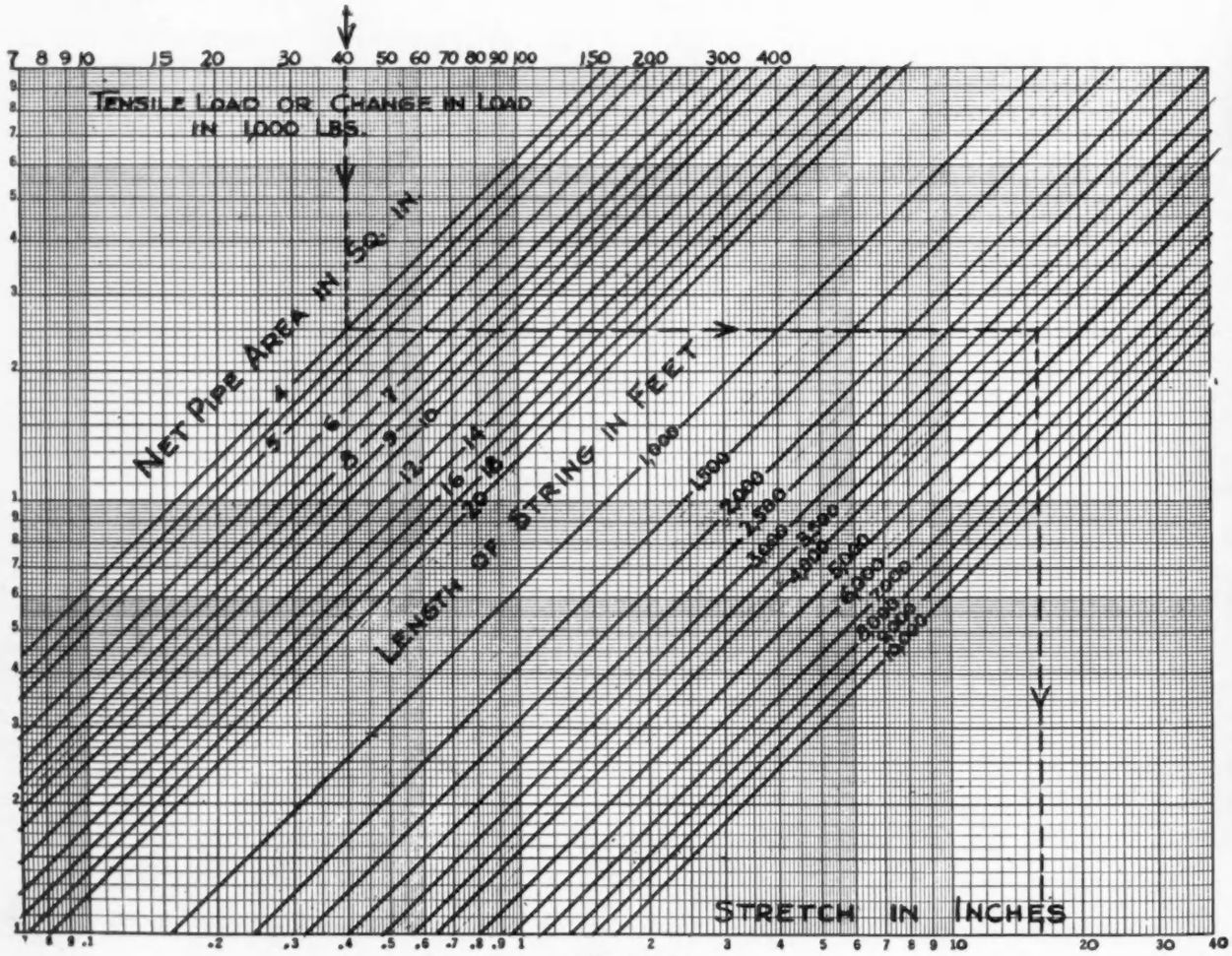

FIGURE 16

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2. Full-Port Lubricant Sealing Grooves.
3. Wedge-Proof cylindrical Super-Surfaced Core.
4. Sealing Grooves on Plug never pass Ports.

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2. **FULL-PORT SEALING GROOVES**—Sealing grooves encircle ports — assures complete uniform seal • Provides a dependable seal against high pressures, liquid or gas • Full-Port Lubrication thoroughly lubricates core — valve operates easily • Reduces washouts • Reduces wear and extends life of valve

3. **WEDGE-PROOF SUPER-SURFACED CORE**—Cylindrical Core positively cannot wedge—permits easy turning • Perfect fit of core to body conserves lubricant and maintains leakproof seal longer • Lubricant lasts longer . . . saves time . . . saves valves • Super-Surfaced core provides extra resistance to abrasives and corrosion agents • Reduces wear — lasts longer

4. **SEALING GROOVES ON CORE**—Never exposed to fluid • Prevent loss of lubricant into fluid line . . . insures constant seal • Protects sealing grooves on core from direct cutting action of fluid • Lessens intrusion of abrasives into lubricant sealing grooves . . . reduces wear on vital sealing surfaces • Prolongs life of valve

*When lubricating a Mission Plug Valve, a portion of the lubricant is forced into reservoirs. Thereafter, the line pressure AUTOMATICALLY feeds this stored lubricant, as needed, into the down-stream seal grooves. So long as lubricant remains in the reservoir a perfect seal is assured.

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in stress of sufficient magnitude to cause failure. Failure by fatigue requires a variation in stress. Failure can result from a high direct stress with little variation or a low direct stress with a large variation. If the direct load or tension is kept to a minimum, the danger of failure because of fatigue will obviously be kept to a minimum. The direct load can be controlled by release of tension after the cement has set.

If, however, too much tension is released, there is danger of failure by buckling (see Article I) and perhaps some danger from fatigue in the region of zero or compression stress, since a little force perpendicular to the pipe could cause a considerable sidewise deflection and bending stress. If the pipe were free of the hole for its entire length, there would be little danger in tension release as far as danger of introducing a compression section is concerned. Since however, caving or settling of formation can occur in many of the formations encountered very shortly after the casing is cemented, it it difficult to know how much tension to release.

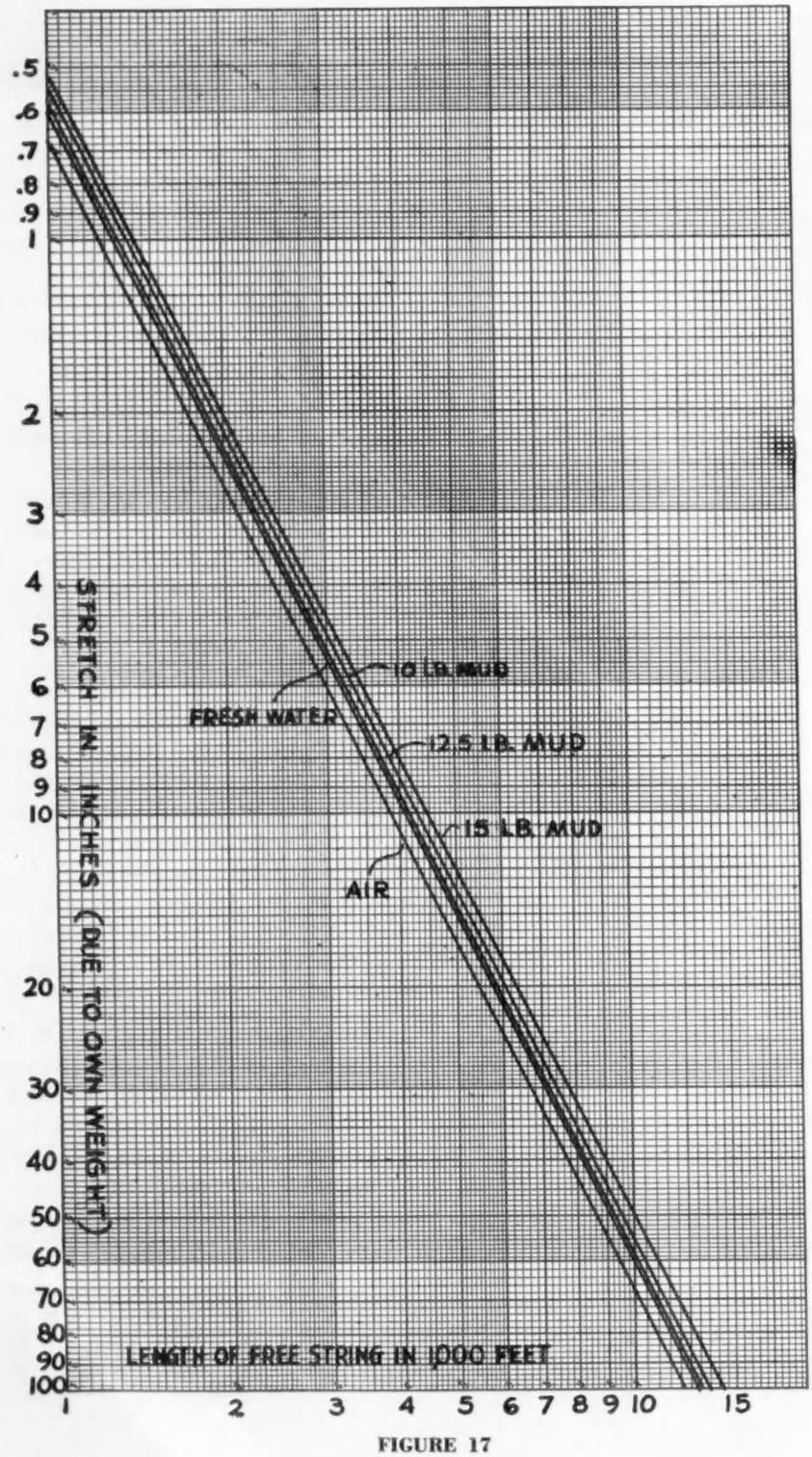


FIGURE 17

The length of free casing can be determined by releasing part of the load and measuring the corresponding change in length of the string. If P_1 is the casing load at the surface before release of the tension, P_2 the load after some tension release, e is the total amount which the casing contracts upon the release of this tension, we have

$$\frac{(P_1 - P_2)}{AE} l = \frac{e}{12} \qquad (1)$$

where P_1 = load before release of tension
P_2 = load after release of some tension
l = free length of casing string in feet
A = net area of casing in square inches
E = modulus of elasticity = 30×10^6
e = change in length in inches

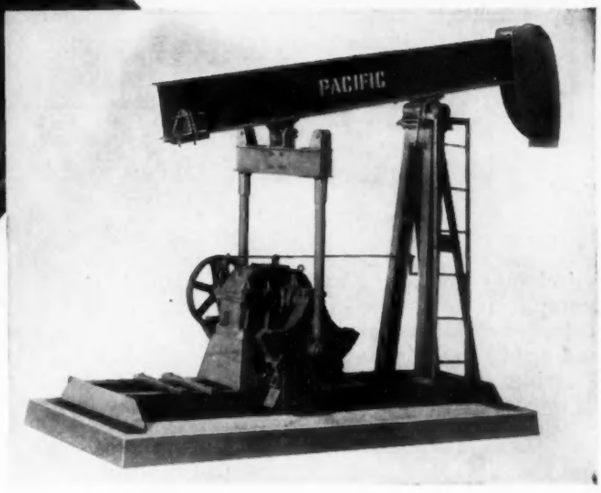
The change in length can be measured with reference to some point on the derrick floor or with reference to the casing head, and the change in load can be determined from a good weight indicator. Theoretically this method could be used to check height of cement behind pipe or to calculate free length where it is desired to cut off and recover casing. The difficulty with the use of this relation is that there may be some friction on the string even though it be free; and as was pointed out above, it is never known if the entire string is free. While the use of this relation will not always give the complete answer, it is the best that can be done; and it does give an approximate answer. To facilitate the use of this relation, Figure 16 has been drawn. This figure permits the calculation of change in length due to a change in load, or it can be used to calculate the free length if the change in length

WITH PACIFIC IT'S HYATTS

ALL THE WAY THROUGH

Opposite: Pacific reducer with cover removed showing all shafts on Hyatts.

Below: Reducer as installed on the new pumping jack also built by the Pacific Gear and Tool Works, Inc. of Los Angeles, California.



High, low, and intermediate shafts in the Pacific Reduction Units turn on Hyatt Roller Bearings.

Longer equipment life—no time out for bearing wear or care—no power losses—perfect gear alignment at all times with all shafts rolling on sturdy Hyatts.

Another indication of the preference for and advantages of Hyatt Roller Bearings in the oil field . . . especially wherever the going is tough.

Hyatt Bearings Division, General Motors Sales Corporation, Harrison, N. J., Chicago, Pittsburgh, Detroit, San Francisco.

HYATT *Roller* BEARINGS

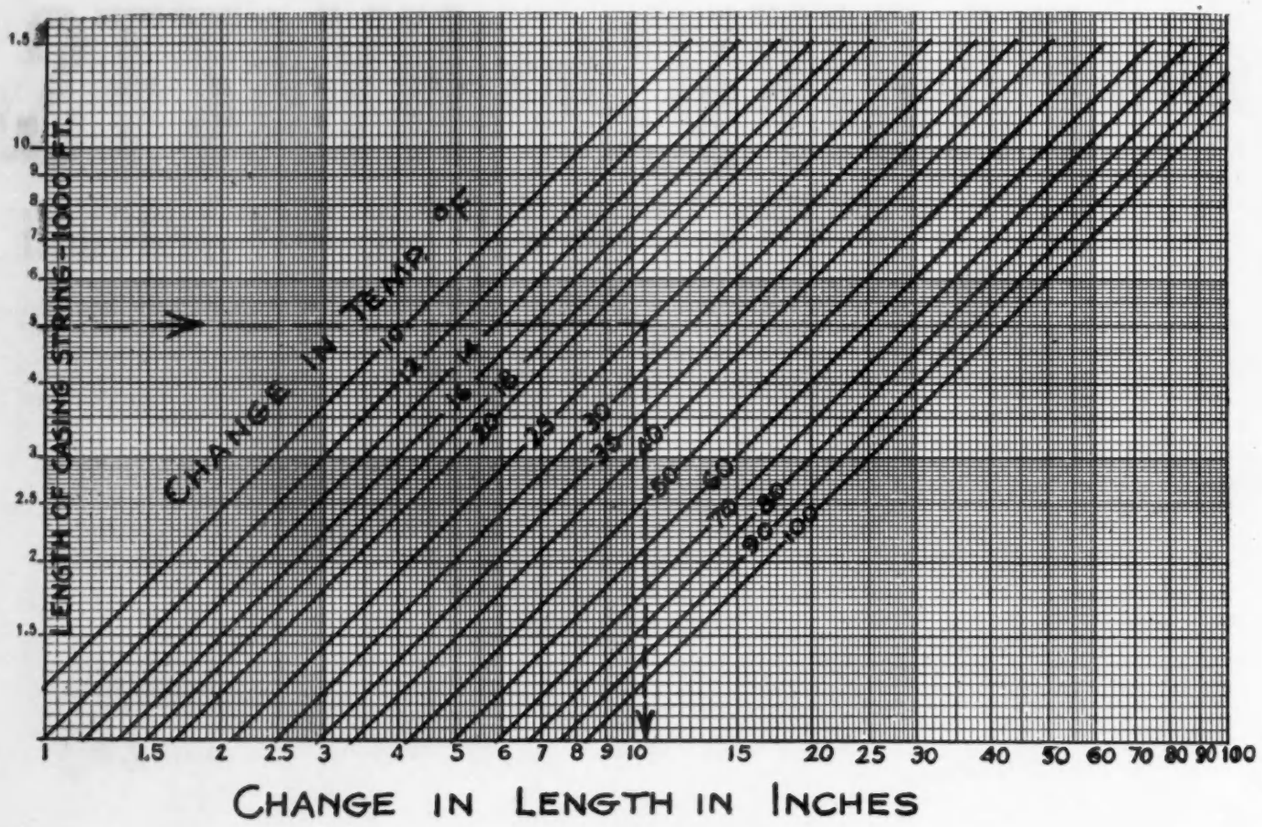


FIGURE 18

and change in load be known. For example, if the area of the pipe is 4 square inches, the change in load 40,000 pounds, and the length of string 4000 feet, the change in length will be 16 inches. This can be found from Figure 16 by entering on the scale marked "Tensile Load or Change in Load" at 40,000 pounds as indicated by the arrow, then tracing down to the net pipe area in square inches, then across to the length of string in feet, and then down reading 16 inches on the lower scale. If the area, change in load, and change in length be known, the problem can be solved by entering on the upper scale at 40,000 pounds load, tracing down to the 4-inch line and then across to the intersection with the stretch line which is 16 inches. This intersection will give the free length which is 4000 feet. Table 4 lists net area for various sizes and weights of casing for which the change in load may be desired.

TABLE 4

Area for Various Sizes and Weights of Casing for Which Change in Load May Be Required.

Casing Size	Weight	Wall Thickness	Cross Sectional Area	Casing Size	Weight	Wall Thickness	Cross Sectional Area
4½	16	0.334	4.65	7	26	0.362	7.55
4½	18	0.375	5.16	7	28	0.393	8.16
				7	30	0.423	8.74
5	13	0.253	3.77	7	32	0.454	9.35
5	15	0.296	4.40				
5	18	0.362	5.28	7⅝	26.4	0.328	7.61
5	21	0.432	6.20	7⅝	29.7	0.375	8.54
				7⅝	33.7	0.430	9.70
5⅛	14	0.244	4.04				
5⅛	15	0.263	4.34	8⅝	28	0.304	8.01
5⅛	17	.304	4.98	8⅝	32	0.352	9.16
5⅛	20	0.361	5.84	8⅝	36	0.400	10.34
5⅛	23	0.415	6.63	8⅝	38	0.425	10.95
				8⅝	43	0.487	12.46
5¼	14	0.230	4.00	8⅝	44	0.500	12.76
5¼	17	0.280	4.81				
5¼	19.5	0.330	5.62	9	34	0.355	9.65
5¼	22.5	0.380	6.37	9	38	0.402	10.88
				9	40	0.425	11.45
6	16	0.250	4.51	9	45	0.484	12.98
6	18	0.288	5.16	9	55	0.594	15.70
6	20	0.324	5.77				
6	23	0.380	6.71	9⅝	36	0.352	10.26
				9⅝	40	0.395	11.45
6⅛	20	0.288	5.70	9⅝	43.5	0.435	12.55
6⅛	22	0.318	6.26	9⅝	47	0.472	13.58
6⅛	24	0.352	6.92	9⅝	53.5	0.545	15.54
6⅛	26	0.385	7.52				
6⅛	28	0.417	8.11	10¾	40.5	0.350	11.46
6⅛	29	0.432	8.38	10¾	45.5	0.400	13.01
				10¾	51	0.450	14.56
7	20	0.272	5.76	10¾	54	0.483	15.64
7	22	0.301	6.33	10¾	55.5	0.495	15.89
7	24	0.332	6.96				

The values as given by Figure 16 are for a change in load. For a freely suspended string of casing, the stretch due to its own weight will be half of that given by Figure 16. The reason for this being that when a load is on the string, it is assumed to act over the entire length, whereas all the weight is carried at the top and none at the bottom giving as far as stretch is concerned, an effective load equal to half the weight. This half load will, therefore, produce half the stretch or what is equivalent, a given weight of casing will produce only half the stretch that

the same difference in pull or load will produce.

Equation (2) of Article I gave the tensile load to be

$$L_w = lw\left(1 = \frac{\rho m}{\rho s}\right) \qquad (2)$$

where L_w = total weight of casing
l = length of string in feet
w = weight per foot in air
ρm = density of drilling mud = .0361 x specific gravity
ρs = density of steel = .2833 lb/in^3

Putting this value in equation (1) and dividing by 2 to take into account that the stretch is due to its own weight, we find that for a freely hanging string of casing that

$$e_w = \frac{12w\left(1 - \frac{\rho m}{\rho s}\right) l^2}{2\,AE} \qquad (3)$$

Since $w = .2833 \times 12A$

$$e_w = 6.85 \times 10^{-7}\left(1 - \frac{\rho m}{\rho s}\right) l^2$$

where e_w is stretch due to weight alone.

Figure 17 gives the stretch of a casing string due to its own weight when suspended in air and in several different weights of muds. Figure 17 can be used to determine the amount of tension to release when a portion of the string is cemented and it is desired to have zero stress at the top of the cement. For example, consider the case of a 7000-foot string in 10-pound mud, which has 2000 feet of cement placed behind it. The stretch of the 7000-foot string is 29 inches in 10-pound mud. If the stress at the top of the cement is to be zero, the string above the cement would behave as a freely hung string in which case the stretch would be 15 inches. It would then be necessary to lower the casing 29 — 15 = 14 inches.

The stretch or change in length resulting from a change in temperature can be found by using equation (3) of Article I in connection with Figure 16. It can also be found from the formula

$$e_t = 82.8 \times 10^{-6}\,\Delta t \times l$$

where Δt = change in temperature in °F.
l = length in feet
e_t = change in length in inches due to temperature

Figure 3 gives a chart from which the change in length can be calculated for a given length and change in temperature. For example, the change in length of a 5000-foot string of casing as a result of 25°F. change in temperature is 10.5 inches. In case an anticipated change in temperature will occur, the tension release to compensate for it can be calculated from this chart.

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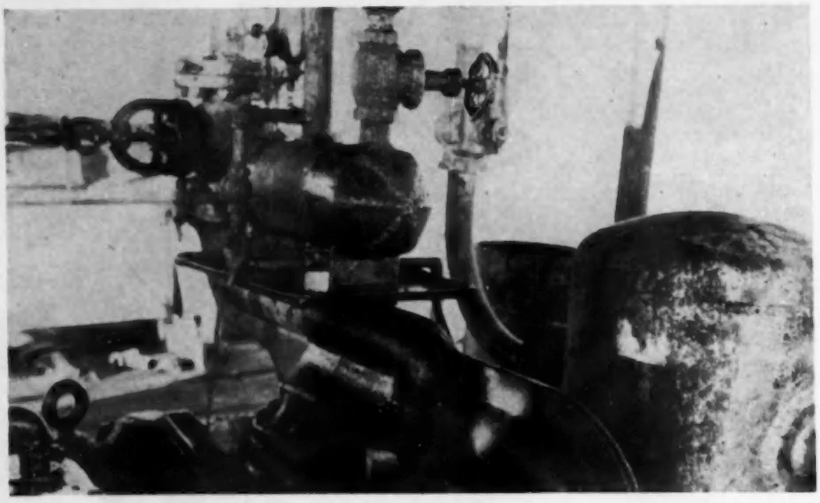
Practical Operating Hints for

1. ENGINE LUBRICATION

Drip Pan Cut Into Lubricator Supports to Intercept Leakage and Promote Cleanliness



An integral part of steam lubricator system, this pan prevents overflow from reaching hot manifold and forming fumes to cause hazardous floor operating conditions.

IN THE interests of safety and neatness around the drilling engine, one operator cuts, with the torch, the brackets normally supporting the lubricator in its place above the inlet manifold. On the stubs thus formed is welded a steel pan, some 14 x 20 inches in extent, with sides about an inch in height. Into this pan, directly over the stubs of the former lubricator support, the unit is then welded, thus in effect interposing the pan between unit and steam header and derrick floor.

Such a pan is ample to catch any overflow occurring when the lubricator is filled, serves to catch even minute leakage, and thus to indicate its presence before it has grown to serious proportions, and is easily wiped clean as the lubricator contents are checked.

The pan may also be used during the colder months for holding the oil can, supporting it in the flat pan, but with one side in contact with the barrel of the lubricator, and thus warming the contents of the can and providing more accurate control. Being formed as a part of the unit, the pan cannot become loosened or lost while on the move, nor does it tend to work loose and rattle, as might a bolted unit for the same purpose.

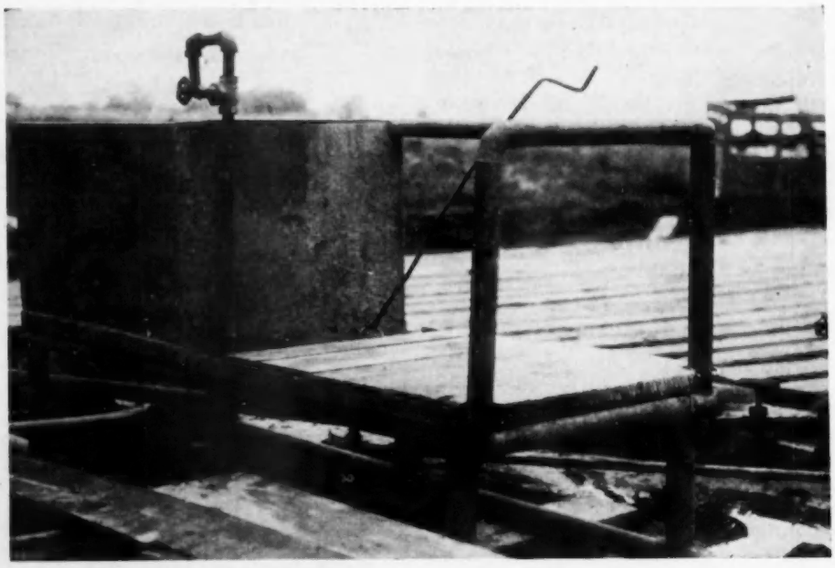
2. AUXILIARIES

Steel Tank Forms Rig Laundering Outfit

A STURDY blow tank for cleaning clothes was made by one drilling contractor from a short cross section of a steel mud ditch, with the open ends sealed by welding steel plates to form a rectangular box 3 x 4 feet and approximately 3 feet deep. Plates are welded all around and are top reinforced with flat steel bars.

The blow barrel is mounted on one end of a skid made of two joints of 2½-inch pipe 10 feet long, on which is erected a supporting framework constructed of 2-inch pipe, elevated one foot above the skid. The tank occupies half the structure, and on the remaining space is a platform of 2 x 12 boards for the pot fireman to stand on while manipulating the device. This platform is protected on the sides by a guard of 2-inch piping.

A 1-inch steam and a 1-inch water line connect at a tee below the tank, each valve-equipped for completely shutting off flow or to allow mixing in desired proportions. The pipes, after joining, enter through a common opening in the bottom. A slotted bull plug fitted inside the tank distributes the mixture of steam and water in several directions and circulates as an aid to cleaning. An additional 1-inch water line is erected in position to admit cold water into top of the device. In one corner of the tank, a valve-equipped outlet permits emptying when not in use. The apparatus, of rugged construction, is easily loaded on truck for moving and is transported as a unit.

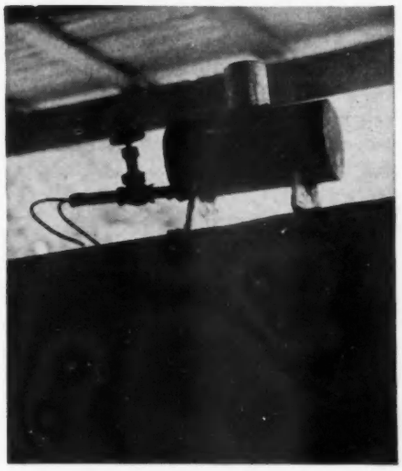


Rectangular tank, equipped with dual water manifold and temperature control valves, enables simplified control of the daily cleaning of work clothing.

THE DRILLING RIG . . .

3. CHAIN UPKEEP

Oversize Reservoir For Chain Lubricant



Ample flow for drip feeds on drilling chain is provided by pipe section at storage tank.

FOR rotary chains not provided with automatic lubricating devices, one operator constructed a lubricator principally from a short section of 4-inch pipe, making the container with provision for metering the fluids to chain. The device is mounted atop the guard, directly above the chain, and contains approximately two quarts of the fluid. at each filling.

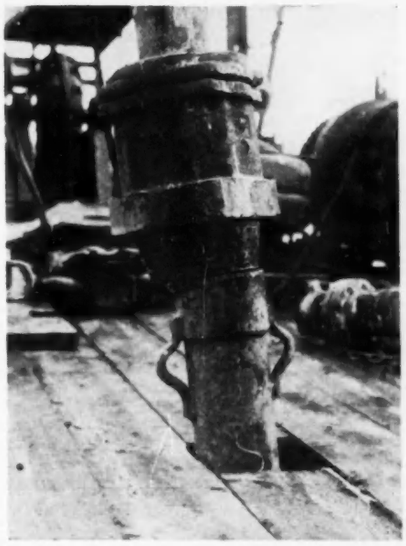
A piece of 4-inch pipe one foot long is used for container, with circular steel plates of the proper diameter welded to each end to close the cylinder. On the top of the container, a short nipple is welded to furnish means of filling. A cap is also provided, threaded to screw tightly to the nipple to prevent waste. Two steel plates are shaped to serve as supports for the container, welded to its bottom, with lower ends of plates bent at 90° angle to rest solidly on chain guard, to which the device is bolted. Tilt of the guard causes the cylinder to set at a slight angle which facilitates drainage from lower end.

Through the steel plate at the drain end of the container, a ½-inch nipple is welded and equipped with a valve for controlling flow. Another short nipple connects with the valve, to the end of which a plug is attached having fittings for two ¼-inch copper tubes which are spread and bent to position over the rotary chain travel.

The device is filled through the aperture provided, and the valve on the drain line is adjusted to allow the lubricant to drip on the chain. As only small portions of lubricant are used, it is seldom necessary to refill the container; and after proper adjustment of the valve is made, lubrication becomes automatic.

4. RATHOLES

Ears Speed Hook-on For Shifting Rathole



Heavy steel ears welded along pipe permit hook or sling attachment for quick lifting.

TO FACILITATE moving the rathole when changing locations, one operator equips the top of the pipe with two handles or ears to facilitate tying catline. The handles are placed on opposite sides of the pipe, and are made of heavy rod material 8 inches long, bent to shape.

Protruding at least two inches from body of the pipe, the handles afford sufficient space for threading and connecting the line. Both ends of the rods are flattened to simplify welding to the pipe. Welded at both ends, the rods form eyes which expedite tying catline and lessen chance of slipping.

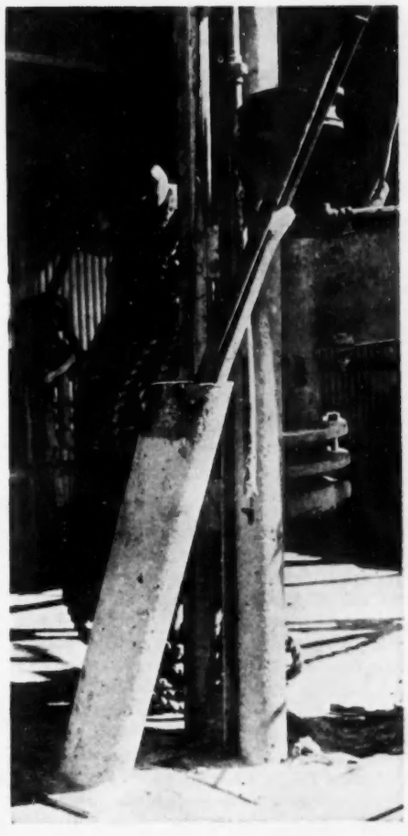
5. TOOL CARE

Bevelled Pipe Holder For Rig Floor Tools

A HOLDER for bars or long-handle tools is made from a short piece of oversized pipe, mounted on the derrick floor at a convenient location. A 4-foot section of 6-inch pipe provides a socket in which the tools stand, their tops protruding to allow ready identification for selecting proper tool.

Ends of the pipe are cut at a 30° angle, and on the bottom is welded a ½-inch steel plate approximately one foot square. Holes are cut in the four corners of this plate, and when it is set flat on the timbers of the floor, bolts or nails driven through the holes hold the base firmly in position.

As the base is placed at an angle, position of the pipe in inclined. The top, being cut across at the same angle, is level with respect to the floor.



Set at angle, tools are always bunched and selecting desired unit is expedited.

Practical Operating Hints for

1. FIRE PROTECTION

Suspended Rack of Fire-Fighting Equipment Ready for Loading on First Available Truck

Shielded from weather by the penthouse top, this rack houses equipment and maintains it in position for instant spotting on any flat-bed or pick-up unit.

TO attain greater speed in fire control, one California company has developed a system of portable fire fighting units located strategically in the field. The unit consists of a wooden box proportioned to fit the flat bed trucks. This box is sturdily constructed and contains all of the necessary fire fighting equipment such as shovels, picks, hoses and chemical fire fighting apparatus.

When not in use, the box is kept under a sheet iron roof which is supported by four pipe legs. The box is slung by four quickly detachable iron hooks and at such a height as to clear all makes of truck bodies. All that is necessary when an emergency arises is to back the nearest available truck under the box, unhook the supports, lash the box to the truck and drive directly to the fire.

Using this system, two men can easily convert an ordinary flat bed truck into a fire fighting unit and many valuable minutes can be saved which otherwise would be lost in waiting for a crew and especially constructed fire truck.—*Ralph L. Fowler, Alhambra, Calif.*

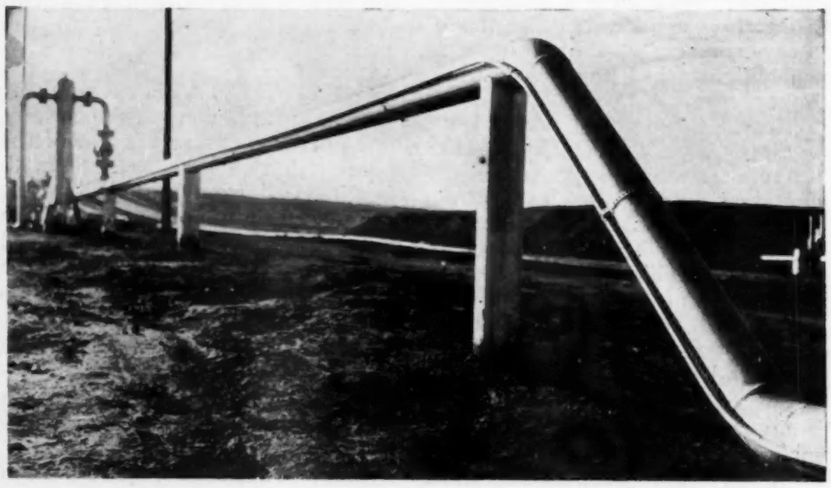
THE practical operating hints for the drilling rig and production man, appearing in these features each week, are secured from oil fields everywhere and offer suggestions that will help to improve field efficiency and safety. The items give an excellent picture of the remarkable ingenuity being exercised by the operating divisions of the industry. Contributions to these features will be paid for at the rate of $5 for each illustrated item accepted. Address contributions to "The Editor, THE OIL WEEKLY, Houston."

2. LIGHTING

Conduit Protection on Lease Lighting Lines

THE stringing of conduit lines on a producing lease or tank farm is a minor problem, but is important from the standpoint that such lines may have to be dug up and used elsewhere within a few years.

Instead of burying conduit lines, one company has adopted the practice of clamping the lines to the side of some large oil or gas line on or above the surface of the ground, and which reaches the approximate vicinity of the point where current is to be used. This is frequently found where the conduit lines are laid from the power transformer pole to lease buildings, then out to tank batteries, trap settings, and finally to individual well locations. In many



Carried along the side of pipe line by adjustable clips, this lighting conduit affords maximum protection to the lighting circuit at minimum cost outlay.

cases, there is at least one pipe line to each of these areas where power or lights may be needed, and on which the conduit lines might be clamped.

An important advantage of this type of installation is the ability to salvage the entire line including all fittings. The average conduit laid in the ground suffers considerable corrosion, often to such an extent that it is worthless for further service. The conduit may be painted and kept in a neat-appearing condition without appreciable extra work, at the same time that the other line is painted.

3. TANK SAFETY

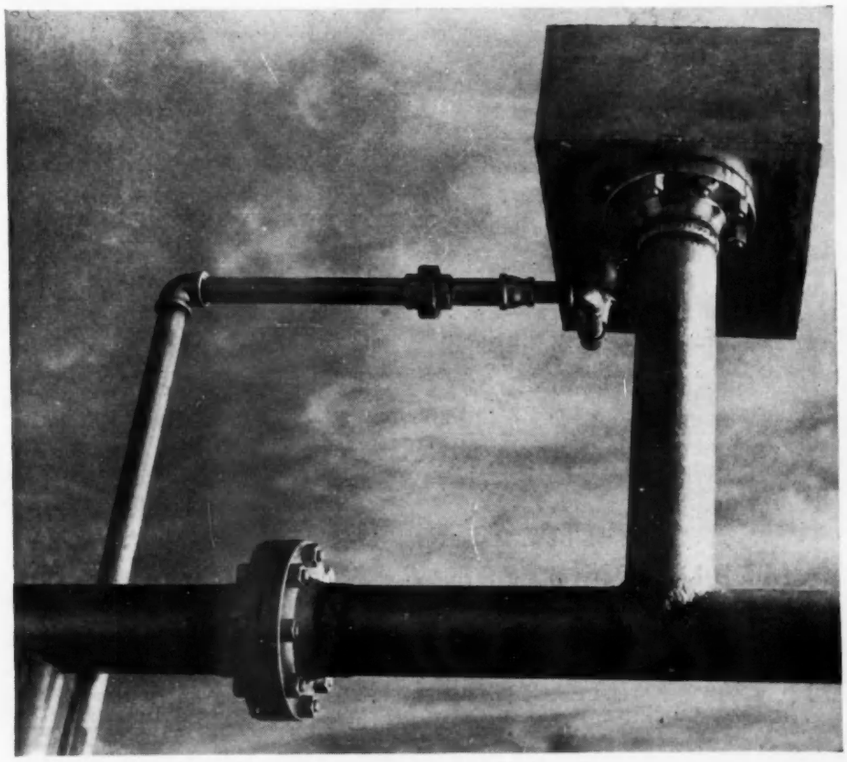
Snuffing Box Checks Unsightly Vent Spray

THE tank vent mounted above the battery quite often is the source and cause of oil spray raining down on the tanks, making the platforms, stairways, and valve handles slippery, and in general, causing the tanks themselves to become very unsightly.

One company eliminates such conditions by mounting the vent inside an open-topped sheet steel container. The exact size of such a container depends largely upon the size and nature of the vent used, the all-welded rectangular box being several inches deeper and wider in all dimensions than the vent housing.

Holes of the proper size are cut into the bottom of the container so that it could be held between the two flanges of the union connecting the vent to the vertical pipe of the tank vapor collecting line. Condensate and oil which come out of the vent collect in the bottom of the container, whence the fluid is drained through a small line leading to a waste sump near the base of the tanks.

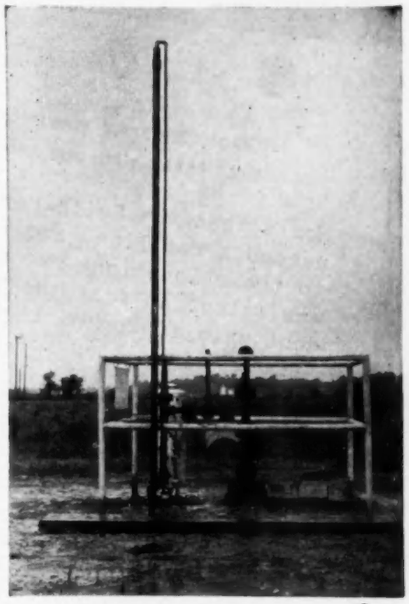
The vent shield does not affect normal operation of the vapor system, and the slight cost of the initial installation more than pays for itself within a very short while, by eliminating frequent cleaning the tanks and equipment surrounding them.



Surrounding the usual tank vent with a box and built-in drain permits the suppression and proper drainage of any liquids vented with gas from inflow.

4. TREATING

Riser Collects Gas for Injector Powering



Tied into flow line at well, this riser serves as reservoir for feeble gas output.

VOLUME of gas needed to power a chemical injector treating fluid from a well may be obtained directly from the flowline by use of a vertical pipe or riser on the line. One operator uses a 10-foot joint of 2-inch pipe. The top is equipped with a hydraulic swage which reduces the pipe to ½-inch, and which conducts gas into a copper tube and thence to the injector.

Chemicals are introduced on the upstream side of the choke, in order to receive more complete mixing and so to facilitate separation of emulsified oil and water. The injector which pumps the chemical into the line is capable of building adequate pressure to force the fluid into the flowline, and requires but a small amount of gas for power. The riser, placed on the downstream side of the choke, receives fluid at a reduced pressure, removing inclination of the fluid to rise.

Gas collects at the top, and small amounts are fed through the tube into the pump for consumption. Excess gas is retained with the fluid and carried to the separator with the well flow.

"THERE'S A WIRE LINE THAT JUST WON'T GIVE UP"

FROM THE DAILY REPORT OF A TIGER BRAND WIRE LINE ENGINEER

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The super thanked me for driving out and said his next length of line would also be American Tiger Brand.

Bill

IF you figure you're not getting the right service out of your wire lines, call in an American Tiger Brand Wire Line Engineer — these men know how to help you stretch your wire line dollar. And they should know—they're right in the field—they run across all sorts of situations every day. They live and breathe problems such as you might have. They know how much punishment a wire line has to take, and how the men on the job can lengthen wire line life.

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HIGHLIGHTS IN THE WEEK'S NEWS

Control

Texas Boosts Allowable by Eliminating One Shutdown

The Texas Railroad Commission January statewide proration order fixed a total net daily allowable of 1,620,659 barrels, which is expected to result in a daily average yield of about 1,570,000 barrels. With an estimated under-production of 4.27 percent (the latest available under-production figure, which was for the month of October), the state allowable will be some 22,000 barrels daily under the Petroleum Coordinator's recommended production of 1,573,500 barrels during the early part of the month. By the middle of January, due to new completions, the actual daily production will almost coincide with that of the coordinator's recommendation. Thereafter the yield will be higher, making up for the slack early in the month.

In keeping with the increase recommended by the Office of the Petroleum Coordinator, this figure represents a sizeable advance. The total net allowable on December 1 was 1,555,192 barrels, or 65,467 barrels less than that effective January 1.

The increase was gained by lifting one shutdown day, leaving a total of seven shutdowns for the month. Shutdown days were prescribed for January 4, 11, 15, 18, 25, 30 and 31.

The only changes in the order included: (1) exemption of Darst Creek in Guadalupe County from shutdowns; (2) an increase in the allowable for three Ordovician fields in West Texas which produce a sweet, paraffinic crude yielding high viscosity index lube oils. These fields have been set up on a different formula from that of other West Texas crudes because of their peculiar characteristics. These Ordovician crudes are now set up on a formula similar to low cold test crudes in the Gulf Coast.

The three fields which received an allowable increase were Abell, up from 1682 to 2750 barrels daily; Apco-Warner, increased from 506 to 770; and Sand Hills Ordovician raised from 1220 to 1685.

The commission's chief supervisor of oil and gas, Dr. F. V. L. Patten, said there are only five fields in Texas producing this grade of crude. The other two are the Rodessa field in East Central Texas and the Big Lake Ordovician field in West Texas, both of which are producing virtually at capacity, he pointed out.

Texas Adopts Standard 40-Acre Well Spacing

Plans for a definite program of procedure during the war were outlined by the Texas Railroad Commission to oil men attending the resumed statewide proration hearing in Austin last week.

Three noteworthy changes were made known, most important of which was the adoption of a new statewide standard 40-acre spacing rule effective January 1, 1942. The new rule will remain in effect for the duration of the war. Wells will be located on a 1320-660 pattern, instead of a 933-467-foot plan followed for the past several months. After January 1 all orders issued by the railroad commission authorizing exceptions to Rule 37 will carry a clause stating that such permit is granted subject to whether the Office of the Petroleum Coordinator will allow materials for such wells. This was in keeping with the new order of the OPM, which grants equipment priority ratings to wells on 40-acre spacing, but will make it more difficult for wells on smaller spacing patterns.

As another part of the war-tiime program, strictly confidential hearings on the needs of refineries and sellers of war materials will be conducted by the commission. Those desiring to submit evidence relating to high octane crude and other similar matters are advised to get in touch with the commission by wire or telephone. A private hearing will be conducted by the commission in Austin at a specified time. No notice of these hearings will be given to the public, because the commission feels such information should be confidential in the interest of national welfare. The regular civil procedure will not be interrupted, hearings of an ordinary nature continuing to be public as usual.

The commission also announced that with the discontinuance of the Bureau of Mines estimates of demannd by states, it would follow the recommendations of the Petroleum Coordinator in fixing state allowables.

All three members of the commission were present at the hearing. Seated on the bench with them was E. DeGolyer, director of conservation for the OPC.

Commending the railroad commission for its outright efforts to cooperate with the federal government, DeGolyer assured the commission members, as well as the oil industry, that "we don't want to get out of our sphere any more than we have to." He announced that any recommendations made by the railroad commission will carry a great deal of weight with the Office of Production Management and the OPC.

California Must Revise Allowable Allocations

The District 5 Production Committee has named a Conservation Committee to distribute the California January quota of 646,200 barrels, as assigned by Petroleum Coordinator Ickes. A completely new plan of distribution will be necessary in view of the insistance of the Department of Justice that the state's uniform formula method is unacceptable. However, mindful of the fact that it is of current primary importance to keep the California industry operating on an even keel without serious disruption, no radical changes in field allocations is contemplated immediately. Assigning of production quotas to fields and wells, insofar as possible, will be undertaken under the rules prescribed in the state's production plan. As time permits these rules will be progressively applied.

Ultimately, it is contemplated allocation schedules in California will be worked out to yield the amount of each grade of oil necessary to meet demands for the separate grades. The Production Committee has been informed, however, there is no immediate need to give special consideration to particular fields because of the greater need for their particular output. Eventually, however, considerations of demand requirements will be given important weight.

Recommendations have been forwarded to the Coordinator by the District 5 General Committee requesting the designation of the oil industry as a vital defense industry. Loss of technical personnel to the armed forces and other defense industries have already been severe in California. An effort will be made to prevent serious disruption of technical efficiency by securing draft deferrment of men needed to carry on industry work.

Dislocation of the Pacific tanker fleet is seen as carrying the immediate possibility of disrupting production schedules in those fields dependent upon tankships for movement of oil to refining centers. Prospect that a transportation bottleneck may also carry through to Pacific Northwest marketing operations with early reflection in total Pacific Coast territory demand statistics is also a recognized possibility. Such an eventuality would have early repercussions in operations in all California fields. From Washington word has come that the California marketing committee has been asked to look into plans for rationing motor fuel on the Pacific Coast. The Pacific Northwest market has been consuming 130,000 barrels of products daily and before tanker diversions to the Atlantic some 50 ships were moving in

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this trade and along other coastwise routes. Protective measures to safeguard tankers on the West Coast will undoubtedly cut the volume of supplies moving into Northwestern markets and result in voluntary or enforced rationing of motor fuel, probably in the near future.

Developments over the next few weeks likely will indicate the extent to which oil transportation will be impaired in this area. The Production Committee for District 5 is already aware that developments may prevent California producing its full January quota of 646,200 barrels daily, may even cut into production schedules for December.

Illinois May Enact Control Measure

Following receipt of a telegram from Petroleum Coordinator Harold L. Ickes on December 24 informing him the allowable production of Illinois had been set at 386,400 barrels daily for the month of January, Governor Dwight Green immediately notified the coordinator that the state would attempt to set up machinery to comply with the federal request. Illinois production during December has averaged slightly under 400,000 barrels per day.

The coordinator's telegramed order followed a recent communication advising Governor Green that unless Illinois established production control by legislation or otherwise the federal government would do so by issuance of regulations.

The state legislature late last June passed a compromise conservation bill, which created a new state division of oil and gas conservation without granting power to limit or control production for the prevention of physical waste. Neither Ickes or other producing states have been satisfied by this measure.

When the war emergency arose, Coordinator Ickes renewed his request for "home rule" of Illinois petroleum industry. However, Governor Green failed to include the subject of oil conservation in a special called session of the legislature that convened December 18.

Since December 18 aides of the governor disclosed that a series of conferences and discussion have been held between representatives of the industry in an effort to map strategy for introduction of the desired control bill in a second special legislative session slated to be called December 29.

Stanolind Buys Part of Landreth's Properties

Stanolind Oil and Gas Company last week announced the purchase of all of Landreth Production Corporation's properties in the North Cowden field, Ector County, Texas, and the purchase of one-half of Landreth's interest in all the leases, wells, and equipment in the Goldsmith field, Ector County; the Penwell field, Ector County; the Grand Falls field, Ward County; the Taylor-Link field, Pecos County; the Hobbs field, the Eunice field, and the Penrose field, all in Lea County, New Mexico.

The consideration was approximately $4,000,000.

Involved in the transaction were a total of 191 gross wells and 45 leases with acreage totaling approximately 6000 acres, giving Stanolind net daily production in excess of 2300 barrels for 107 net wells.

Valuation Experts Soon to Take Up Mexican Problem

President Roosevelt's appointment on December 19 of Morris L. Cooke of Philadelphia as the American expert to collaborate with Mexico's recently appointed expert in determining the amount Mexico is to pay the American oil companies for expropriation of their properties in 1938 means that within two weeks the two representatives will meet in Mexico City to begin their work. This first meeting was provided for in the international agreement announced by Secretary Hull on November 19. Manuel J. Zerada, chief clerk of the Ministry of National Economy, is the Mexican representative.

Cooke is chairman of the Shipbuilding Stabilization Commission and a technical consultant to Sidney Hillman in OPM. Since 1928 he has been a member of the Power Authority of New York state.

Venezuelan Pipe Line Begins Running Oil

Mene Grande Oil Company expects completion by January 15 of its 53-kilometer pipe line from the Leona field, eastern Venezuela, to the Mene Grande main line carrying oil to the Caribbean coast. Capacity of the Leona line will be around 35,000 barrels daily, which will allow for future expansion of production. Leona output averaged 420 barrels per day last October, production being held in pending completion of the pipe line.

Mene Grande Oil Company's Quiamare 1 test in eastern Venezuela is bottomed at about 9000 feet and awaiting removal of 5-inch casing collapsed at 8640 ft. The collapse occurred a few weeks ago. The company expects to put down another test in the vicinity of No. 1 early next year.

Petrolera Las Mercedes is erecting derrick for Mercedes 3 in Guarico state. Mercedes 2 was being tested at 4450 feet after drilling to 5586 feet. The Texas Company (Venezuela) was drilling at 2540 feet in Rincon Largo 2, near the Santa Ana field.

Colombia Notes Need For Additional Discoveries

Necessity for development of new productive areas in Colombia to offset apparently limited production of established fields has been pointed out by General Manager Caro of Bank of the Republic at Bogota. Caro points out that exports of oil from Colombia during the fiscal period July 1940-1941 totaled 19,844,000 barrels as compared with 21,811,000 barrels exported in the previous period. This is a 10 percent drop, and a comparable drop has occurred in the first six months of 1941 with respect to the same period of 1940.

Caro points out that declining exports have followed failure of the present fields on the DeMares and Barco Concessions to develop production that had been expected. Considerable wildcat drilling outside these areas has been in progress throughout 1941 but so far without development of a new field. A bright spot in last fall's operations, however, was completion of Shell Oil Company of Colombia's Casabe 1 in the Magdalena River Valley for a reported 480 barrels daily. On the strength of this showing another test will soon be started.

Richmond Petroleum Company is reported as having temporarily suspended Culimba 1 at 2069 feet, some 40 feet below basement. The well is on the Villamizar Concession in Magdalena River Valley. Two miles east of this test Richmond is rigging Braval 1 on the Salvador Camacho Concession, recently transferred to a Richmond affiliate. Compania Colombiana de Petroleo El Dorado, also a Richmond affiliate, has obtained from the government acceptance of its bid for a 123,500-acre concession in Magdalena Department about 125 miles from the coast.

McCarthy 1, a test of Carare Petroleum Company in the middle Magdalena River Valley, is drilling below 100 feet with surface casing set at that depth.

Turner Valley Boosts Production Over Quota

With six recently-completed wells on test and producing flush oil yield before being allotted conservation board quotas, Turner Valley wells are exceeding the total field quota of 26,000 barrels daily by more than 1600 barrels.

The conservation board report for a recent week shows a daily average yield of 27,688 barrels from the field. This is exclusive of a natural gasoline production from absorption plants of 814 barrels daily.

Total petroleum production from all Alberta fields during the week was 28,799 barrels daily compared with 29,936 barrels daily during the corresponding week a year ago, when the field was pushed almost to the limit to make up for previous low quotas.

The report shows 21 wells drilling in Turner Valley and 13 in outside fields in Alberta. In addition to 6 wells on test in Turner Valley, Acme 2 (Vermilion Field), Anaconda - Patricia (Steveville Field) and Vermilion 10 (Vermilion Field) have been completed and are now on test.

Wells on test in Turner Valley are Home 9, Okalta 11, Alberta Pacific Royalties, United B. A., Royalite 58, D. and P. 1.

Vermilion in Alberta Gets Important Well

Premier Investments Ltd. of Vancouver, B. C., has completed an important addition to the Vermilion field in Alberta, at Princeville 2. Production at 1792 feet was a moderate flow of oil, and deepening 5 feet resulted in 35 barrels a day steady flow.

The well is on the McBride-Clinch, Watson lease, about half a mile west of Borradaile station, and is a further extension of the growing field in which there are now nine producing wells, seven of which are on pump and two flowing.

Two further wells have completed drilling and are waiting test. Drilling activity is likely to be well maintained in the field and there are four locations being prepared for immediate drilling on the subdivision immediately north of the new flowing well.

Work is being pushed at the refinery at Borradaile, and the plant is expected to be in operation at the beginning of the new year, supplying fuel oil to the railways.

Stocks React Normally to Near-Record Operations

Both production and refinery processing of crude oil are proceeding at close to the highest levels ever reached, and heavy civilian and military requirements are being satisfactorily fulfilled, as evidenced by normal reactions of the stocks of the major petroleum products. However, virtually all the crude that is being produced is going to refinery stills, and it is not yet clear whether or not there will be a net decrease in crude stocks for December, as there were in the several preceding months, although the government now is discouraging further withdrawals of crude from storage.

United States crude oil production in averaging 4,315,150 barrels daily during the week ended December 20 (American Petroleum Institute figure) was within about 17,000 barrels of the all-time high of a month previously and was almost 700,000 barrels (19.2 percent) above the average of the corresponding week last year (3,621,200 barrels).

Refinery runs of 4,070,000 barrels daily in the December 20 week were only 50,000 barrels under the all-time record runs which occurred in mid-October. The plants were processing almost 500,000 barrels a day (13.6 percent) more than one year earlier. They were operated at 91.4 percent of capacity, with most districts outside California and the Rocky Mountains making use of 90 to 100 percent of potential, while the latter two districts employed around 75 percent of capacity. East Coast plants were run at 92.5 percent of capacity.

Gasoline stocks were increased more than normally when expanded from 87,422,000 to 89,297,000 barrels in the week ended December 20, an increase of nearly 2,000,000 barrels, or twice that in the corresponding week last year. The new total was 7,646,000 barrels (9.4 percent) in excess of the 81,651,000 barrels of finished and unfinished gasoline on hand December 20 last year. All districts added to storage except the Appalachian, Inland Texas, and North Louisiana-Arkansas areas. The present stocks are above those held a year ago in all districts except North Louisiana-Arkansas. The East Coast has 20,218,000 barrels on hand now, an increase of nearly 2,500,000 barrels over a year ago. Indiana-Illinois-Kentucky district in holding 16,050,000 barrels also shows a gain of over 2,000,000 barrels. California's 15,705,000 barrels represents practically the same total as that held a year ago. Oklahoma-Kansas-Missouri district has 8,280,000 barrels, or 1,296,000 more than a year ago; the Texas Gulf Coast 13,372,000 barrels, representing a million barrels more; and Inland Texas 2,403,000 barrels, a half million barrels more.

Stocks of gas oil and distillate fuel in the United States were seasonally reduced about 1,300,000 barrels in the week ended December 20, in coming down from 52,809,000 to 51,487,000 barrels. The latter quantity was 8,578,000 barrels greater than that of 42,909,000 barrels held at the corresponding time last year, a 20 percent increase. The East and West Coasts account for all but a million barrels of the increase since a year ago, East Coast inventories being 4,716,000 barrels greater at 19,693,000 barrels, and those in California being 2,758,000 barrels larger at 12,865,000 barrels. The Middle West and the upper Mid-Continent show increases of over 500,000 barrels each. The Gulf Coast as a whole shows no material change.

Heavy fuel oil stocks in the country were drawn upon to the extent of about 200,000 barrels, having been lowered to 95,560,000 barrels as of December 20. That quantity was about 6,000,000 barrels (6 percent) smaller than the inventory held a year before. However, stocks east of California are somewhat larger than a year ago. Those on the East Coast, 12,598,000 barrels, are 1,223,000 barrels greater than the year-ago total, and the Indiana-Illinois-Kentucky area shows about the same build-up with 4,213,000 barrels on hand. Other districts with more residual fuel oil than a year ago include the Appalachian area, Oklahoma-Kansas-Missouri, and the Louisiana Gulf Coast. Decreases are shown by Inland Texas, the Texas Gulf Coast, North Louisiana-Arkansas, and the Rocky Mountain states as well as California. For the week ended December 20, there were withdrawals from stocks on the East Coast (211,000 barrels), on the Texas Gulf Coast (293,000 barrels), and in the Appalachian, Middle Western, Inland Texas, North Louisiana-Arkansas, and Rocky Mountain districts; while there were additions to storage in California (342,000 barrels), Oklahoma - Kansas - Missouri, and the Louisiana Gulf Coast district.

Crude oil stocks of the United States came down from 244,200,000 barrels on December 13 to 242,683,000 barrels, and at the latter level they were slightly lower than on November 29. The new total was 18,610,000 barrels (7 percent) smaller than that of 261,293,000 barrels reported for December 20 last year.

War Developments Overshadow Significance of Oil Prices

Markets remain generally strong, and prices in the industry are unchanged, under the control of the federal price agency. The matter of prices has be-

Trends of Operations and Changes in Stocks

Figures are from American Petroleum Institute weekly reports, which are estimates on Bureau of Mines' basis, except those on crude stocks, which are from Bureau of Mines weekly reports.

WEEK ENDED	Crude Oil Production (Barrels Daily)	Crude Runs to Stills (Barrels Daily)	Crude Oil Stocks (Barrels)	Gasoline Stocks (Barrels)	FUEL OIL STOCKS	
					Gas Oil & Dist. Fuels	Residual Fuel Oil
1939:						
April 22	3,526,700	3,280,000	277,156,000	[2]87,769,000	21,085,000	105,035,000
April 29	3,568,200	3,405,000	278,440,000	86,794,000	[7]25,844,000	[7]108,409,000
May 6	3,580,900	3,275,000	[2]278,607,000	86,216,000	26,167,000	108,597,000
August 5	[2]3,909,400	3,445,000	268,982,000	76,431,000	35,601,000	114,512,000
August 26	[5]1,690,800	3,475,000	246,982,000	73,475,000	37,722,000	116,237,000
October 7	3,435,850	3,505,000	231,564,000	[6]71,152,000	38,549,000	114,397,000
October 21	3,771,550	[2]3,650,000	[2]229,127,000	72,122,000	39,358,000	115,060,000
1940:						
January 27	3,611,600	3,470,000	237,339,000	87,914,000	27,407,000	103,015,000
February 24	3,732,100	3,490,000	240,836,000	96,719,000	25,390,000	103,419,000
March 30	3,841,250	3,585,000	250,561,000	101,370,000	23,778,000	105,081,000
April 20	3,858,550	3,535,000	254,881,000	[1]102,817,000	24,779,000	103,323,000
April 27	3,845,250	3,555,000	256,670,000	102,452,000	24,997,000	102,552,000
May 25	3,835,650	3,580,000	259,330,000	100,297,000	28,356,000	104,015,000
June 22	3,846,450	[2]3,690,000	260,891,000	97,276,000	32,751,000	104,683,000
June 29	3,639,550	3,625,000	262,059,000	95,142,000	33,590,000	104,486,000
July 27	3,690,400	3,555,000	262,579,000	90,173,000	38,981,000	105,924,000
August 31	3,501,350	3,575,000	265,865,000	85,393,000	44,766,000	108,774,000
September 28	3,799,950	3,600,000	263,609,000	82,273,000	47,986,000	108,450,000
October 26	3,640,300	3,565,000	262,746,000	80,891,000	48,893,000	108,475,000
November 9	3,584,200	3,510,000	261,631,000	[6]79,847,000	48,408,000	107,687,000
November 30	3,335,050	3,510,000	262,679,000	80,284,000	46,212,000	106,618,000
December 28	3,385,500	3,585,000	261,552,000	83,274,000	42,266,000	102,620,000
1941:						
January 25	3,599,100	3,625,000	260,093,000	88,762,000	39,039,000	100,297,000
February 22	3,629,650	3,590,000	261,783,000	95,812,000	34,381,000	98,631,000
March 29	3,746,550	3,625,000	266,187,000	[3]99,727,000	29,949,000	96,152,000
April 26	3,726,850	3,675,000	266,149,000	96,647,000	29,543,000	94,732,000
May 31	3,786,100	3,699,000	262,356,000	93,845,000	33,524,000	92,757,000
June 28	3,847,250	3,930,000	259,399,000	91,461,000	35,732,000	92,896,000
July 26	3,869,950	3,920,000	252,728,000	86,945,000	40,197,000	93,855,000
August 30	4,004,700	4,070,000	249,413,000	81,672,000	45,351,000	95,052,000
September 27	4,060,000	3,980,000	246,649,000	81,003,000	49,950,000	95,251,000
October 4	3,860,750	4,015,000	246,144,000	[6]80,870,000	49,553,000	96,016,000
October 18	4,110,550	[4]4,120,000	243,605,000	82,584,000	52,403,000	95,800,000
October 25	4,098,800	4,060,000	242,261,000	83,343,000	53,183,000	95,295,000
November 15	4,086,850	4,010,000	240,399,000	83,412,000	[3]54,983,000	95,993,000
November 22	[4]4,336,850	3,995,000	241,956,000	84,579,000	54,396,000	95,982,000
November 29	4,086,000	4,115,000	242,884,000	85,525,000	54,141,000	95,971,000
December 6	4,107,950	3,945,000	244,200,000	86,356,000	53,946,000	95,342,000
December 13	4,109,550	3,997,000	242,683,000	87,422,000	52,809,000	95,762,000
December 20, 1941	4,315,150	4,070,000	.....	89,297,000	51,487,000	95,560,000
December 20, 1940	3,621,200	3,581,000	[4]261,293,000	81,651,000	42,909,000	101,366,000
Amount of change in past year	+693,950	+489,000	—18,610,000	+7,646,000	+8,578,000	—5,806,000
Percent change in past year	+19.2	+13.6	—7.1	+9.4	+19.9	—5.7

[1] All time peak. [2] Peak for year. [3] Lowest since April, 1922. [4] Stocks, December 14, 1940. [5] Lowest since October, 1922, due to shut down of six Mid-Continent states. [6] Lowest for year. [7] Prior to April 29, 1939, data did not include stocks at terminals, in transit, etc., except in California.

come less significant to oil companies, moreover, than the volumes of business that they will be able to do, as the prospect has arisen that during the coming year there may be rationing of gasoline and perhaps other products.

The several district marketing committees are still working on the perfection of plans for carrying out gasoline rationing if that measure becomes necessary, following action of the Office of the Petroleum Coordinator in submitting to the committees two tentative rationing plans, one for jobber rationing, similar to the plan used on the East Coast several months ago, and the other calling for direct consumer rationing, through issuance of cards by state vehicle departments. The plans are being studied for use only in emergency, it is explained, but conditions that would call for oil rationing next summer or sooner are quite conceivable.

The closing-in of war influences upon the industry has been emphasized lately not only by the consideration of plans for rationing but also by other developments, including those with regard to the setting of state crude production allowables and with respect to priorities on oil field and refinery equipment.

Having taken over from the Bureau of Mines the responsibility of allocating the national demand for domestic crude among the states, the Office of the Petroleum Coordinator has stressed the fact that henceforth the immediate and long-term requirements of the federal government will be given primary consideration in the fixing of state production allowables. Producers in the various states, consequently, will be largely affected by the exigencies of war.

Whereas producers only a few months ago were greatly concerned over the existing prices of crude oil, they now have another problem of equal importance, namely, the adjustment of their drilling and operating programs into compatibility with the government's program of priorities on materials used by the industry. Forty-acre spacing of new oil wells and equipping of pumping wells on the basis of one well to 10 acres will be two primary objectives aimed at by the government in allocating equipment and materials to the industry, and fitting into that program will be an important problem for many companies.

Scarcity of natural gasoline for blending and shortage of tetraethyl lead have continued important market problems for makers of motor fuels, and much thought is being given currently to the extraordinary expansion of the nation's capacity for making 100-octane gasoline.

In view of all the significant problems and developments brought about by the war, the ordinary market trends have been dwarfed in significance, and local situations largely reflect district reactions to national affairs.

Western Pennsylvania has exceptionally strong demand for lubricants, for example, as the nation's civilian and military needs for lubes soar, while industrial grade fuel oils are similarly in urgent need. Gasoline shipments continue heavy, with high octane material very scarce; and despite relatively mild winter weather, burning oils are moving in good volume.

Texas and California Lower Gross Crude Production

United States crude oil production dropped to 4,101,700 barrels daily in the week ended December 27 from 4,314,950 the week before, in reflection of a sharp decline in Texas. Output dipped to a point 37,300 barrels under daily demand.

The sharp drop in Texas was due to the fields being closed in for two days, whereas in the previous week they had been shut down only one day. The state averaged 1,485,200 barrels a day, compared with 1,708,600 the week before.

California averaged 638,400 barrels daily against 652,300 the previous week. The Texas and California declines far outweighed the increases in other states, including that in Oklahoma from 415,200 to 419,600 barrels; Illinois, 380,000 to 392,700; Louisiana, 359,050 to 360,300; Kansas, 251,600 to 256,600; New Mexico, 116,700 to 117,500, and Mississippi, 70,000 to 73,100 barrels daily.

East Texas Cycling Plant Being Tested

Lone Star Gasoline Company has completed test runs on its 50,000,000-foot daily capacity cycling plant in the Willow Springs deep field, situated immediately east of the East Texas field. The plant was erected as part consideration for the acquisition of half interest in Roger Lacy's holdings. Lone Star Gasoline Company is negotiating for the purchase of joint holdings of Humble Oil & Refining and Gulf Oil Corporation in the Willow Springs area.

Texas Decline Causes Drop in Production

Estimates Compiled by The OIL WEEKLY

DISTRICT OR STATE	Bureau of Mines Estimate of Daily Demand (Dec.)	State Allowable (Barrels Daily in Dec.)	BARRELS DAILY FOR WEEK ENDED Dec. 20	Dec. 27
TEXAS:				
Texas Panhandle	.....	.....	98,500	87,800
North Texas	.....	.....	108,600	107,700
West Central Texas	.....	.....	31,500	31,500
West Texas	.....	.....	339,700	292,200
East Central Texas	.....	.....	92,200	87,400
East Texas Field	.....	.....	441,400	369,400
South Texas	.....	.....	256,300	215,900
Texas Gulf Coast	.....	.....	340,400	293,300
Total Texas	1,479,700	1,500,760§	1,708,600	1,485,200
CALIFORNIA:				
Long Beach	.....	.....	39,100	39,000
Midway-Sunset	.....	.....	48,900	44,300
Kettleman Hills	.....	.....	37,500	32,400
Wilmington	.....	.....	87,800	84,500
Others	.....	.....	439,000	438,200
Total California	635,800	613,200*	652,300	638,400
OKLAHOMA:				
Oklahoma City	.....	.....	75,300	81,050
Seminole Area	.....	.....	110,956	111,250
Others	.....	.....	228,944	227,300
Total Oklahoma	460,000	428,000	415,200	419,600
ILLINOIS:				
Salem	.....	.....	67,500	67,550
Louden	.....	.....	60,000	61,500
Centralia	.....	.....	7,550	7,500
Other New Pools	.....	.....	234,550	244,450
Old Pools	.....	.....	10,400	11,650
Total Illinois	426,500	.....	380,000	392,700

DISTRICT OR STATE	Bureau of Mines Estimate of Daily Demand (Dec.)	State Allowable (Barrels Daily in Dec.)	BARRELS DAILY FOR WEEK ENDED Dec. 20	Dec. 27
LOUISIANA:				
North Louisiana	.....	.....	81,650	82,100
South Louisiana	.....	.....	277,400	278,200
Total Louisiana	340,000	354,705	359,050	360,300
KANSAS	260,700	264,000	251,600	256,600
NEW MEXICO	116,100	117,000	116,700	117,500
EASTERN STATES:				
Pennsylvania Grade	73,900	.....	75,650	76,050
Others, Eastern	23,000	.....	18,500	18,500
Total Eastern States	96,900	.....	94,150	94,550
MOUNTAIN STATES:				
Wyoming	81,900	.....	85,850	84,050
Montana	20,700	.....	22,350	22,400
Colorado	5,800	.....	5,150	5,250
Total Mountain States	108,400	.....	113,350	111,700
MICHIGAN	52,300	59,950†	56,850	52,850
INDIANA	19,700	.....	18,600	20,200
ARKANSAS	76,500	75,297	73,550	73,700
MISSISSIPPI	60,300	.....	70,000	73,100
NEBRASKA	6,100	.....	5,000	5,300
‡Total 8 Prorated States	3,421,100	3,412,912	3,633,850	3,404,150
Total United States	4,139,000	.....	4,314,950	4,101,700

* Recommendation of Conservation Committee of California Oil Producers.

† No definite state allowable fixed under prescribed regulations; figure shown here represents daily average production in 4 weeks ended November 22.

‡ Texas, California, Oklahoma, Louisiana, Kansas, New Mexico, Arkansas, Michigan.

§ Calculated daily average of actual production at beginning of month, allowing for under production of 3½ percent below net allowable, which was figured at 1,555,192 barrels daily as of December 1. However, allowable normally increases as new wells are completed, and consequently, actual daily average production for month may be expected to be slightly greater than average as calculated December 1. Under December order, most Texas fields were ordered shut down December 6, 7, 13, 14, 21, 25, 28 and 30.

U. S. FIELD OPERATIONS

Illinois Basin

North Noble Outpost Flowing From McClosky

Casing set at Richland County wildcat; outpost to North Noble field flows; outpost to Calvin field, White County, sets casing; Wayne County wildcat abandoned.

Richland County: Benedum-Trees' L. J. Powell 1, E½ NW SE 10-3n-10e, a half mile south of Olney, scheduled to drill plug after Christmas to test McClosky at 3146-57 and 3162-63 ft; casing set on bottom at 3182 ft, will perforate saturated zones; on drill stem 180 ft of oil, 45 ft oily mud and 540 ft salt water showed. Nearest production is field just north of Olney.

Pure Oil Co.'s Boley 1, C E½ NW SE 28-4n-9e, half mile north outpost to North Noble field, flowing from McClosky, 3003 ft.

White County: Washburn & Powers' Brown 1, NE NW SE NW 20-4s-14w, three locations south of production in Calvin field, set pipe to test Aux Vases topped at 2945 ft; elevation 469 ft.

Cherry-Kidd-Lambert's R. E. Pearce 1, NE SE NE 35-6s-10e, a wildcat south and west of Rising Sun, abandoned 2265 ft.

Cameron Oil Co.'s Deboard 1, SE NE NE 2-7s-8e, north outpost to Roland field, showed for 80-barrel well natural in Benoist at 2826-80 ft, testing after 80-qt shot.

Cameron's Reilling 1, SW SE SE 21-6s-10e, between Rising Sun and Storms fields, abandoned at 3216 ft, through McClosky lime.

Wayne County: N. V. Duncan's Guthrie 1, C N½ NW SW 35-1n-5e, 5 miles west of Johnsonville field, abandoned at 3310 ft in St. Louis lime; St. Genevieve 2973 ft, St. Louis 3092 ft; there was no McClosky.

Bryant et al Charles Harter 1, S½ SW NW 28-3n-7e, abnd in McClosky. Just east of Flora, Harter 1 was three miles from production; total depth about 2950 ft.

Clay County: Pure Oil Co.'s Stanford 1, C N½ NE SW 10-2n-7e, in new West Clay City field, flowed 1100 barrels in 24 hours natural from McClosky; east offset to field's discovery well, Pure's L. A. Pearce A-1, C S½ SW NE 10-2n-7e, flowed 1292 after 5000 gallons of acid in McClosky but prior to acid flowed 1450 barrels.

Edwards County: Helmerich & Payne's Reed 1, SW NE NW 18-1s-11e, three locations east of production Bone Gap field, cored show in McClosky, scheduled to set pipe and test.

Hamilton County: J. Lee Youngblood's S. Thompson 1, C W½ NW SW 29-4s-5e, northwest of McLeansboro, shut down for pump repairs 3338; from elevation 515 test topped Menard 2441, Menard lime 2467, Waltersburg 2529, Vienna 2599, Tar Springs 2604, Hardensburg 2741, Golconda 2818, Cypress 2934, Weiler 2948, Benoist 3174, Aux Vases 3250, Lower O'Hara 3263.

Marion County: Deaton-Bears' Iuka State Bank 1, E½ NW SW 33-1n-4e, abandoned 2949 ft, upper McClosky at 2883 ft.

Indiana

Vanderburgh County: Seven miles south and three miles west of Evansville, derrick is up for Jean Longoria's W. L. Bauer 1, SW SW SW 22-7s-11w, wildcat.

Posey County: In the fast-growing Mt. Vernon field, Sinclair-Wyoming Oil Co. completed P. H. Hagemann 1, C N½ NW SE 1-7s-14w, which pumped 300 barrels in 18 hours from Waltersburg and Cypress, and Hagemann 2, SW NW SE 1-7s-14w, which pumped 125 barrels in 16 hours from Waltersburg and Cypress. Abandoned was Martin & Volkmann's Hagemann 1, NW NE SW 6-7s-13w, east outpost to the Mt. Vernon field. Hole was bottomed at 2683 ft, through the Cypress, which carried water. Waltersburg also carried water.

Gibson County: Near Owensville, Maner Graham's Thompson 1, C N½ SW SW 11-3s-12w, new wildcat start near Owensville, was drilling at 1975 ft, after topping Waltersburg section at 1865 ft; elevation 506 ft.

Oklahoma

North St. Louis Pool Extended Two Directions

New Prue discovery for Creek County now testing; sand lense in deep horizon may pay off in Logan County; two major extensions for North St. Louis pool.

Creek County: Deep Rock Oil Corp.'s Anthis 1, SE SW SE 22-18n-9e, in Mannford district, may open a new Prue sand area, well drilled to 2049 ft in sand topped at 2003 ft and was testing.

Logan County: Cities Service Oil Co.'s Babcock 1, SW NE NE 10-15-4w, 3 mi west of Navina, found both first and second Wilcox sands unproductive although test ran 100 ft high structurally, then drilled ahead to 6470 ft where it picked up a considerable show of oil in the cuttings from a sand lense below Wilcox, halted there for an electrical survey before deciding on abandonment or setting casing for a test, the wildcat is the 10th on the graveyard Navina structure, all others being dry holes.

Pottawatomie County: North St. Louis was given two major extensions, one north and one west. Mid-Continent Petroleum Corp.'s Weld 1, SE SW SE 22-8n-4e, 2 locations north of proven area, drilled to 3964 ft in Hunton lime, acidized with 1000 gals, flowed 268 bbls oil in 24 hrs through 13/64-in choke on tubing. Amerada Petroleum Corp.'s Peters 4, SWc NW 27-8n-4e, drilled to 3895 ft in Hunton, acidized 3000 gals, flowed 1122 bbls oil in 24 hrs through open 2-in tubing for one of biggest producers in northern end of immense St. Louis district.

Kansas

Barber County Strike May Be Year's Best

New pool opener looms as important exploratory test; operators coring for show in offset to initial producer in new Kearny County pool; small producer may open new area; Bemis field extended.

Barber County: Pryor & Lockhart's Massey 1, C EL NE NW 35-30s-15w, opener of the Sun City pool, gained maximum rating of 3000 bbls oil daily from perforations in Kansas City-Lansing lime at 3344-4342 ft, well believed to be an extension of Lerado anticline which produces far to the northeast, may be 1941's major exploratory test.

Kearny County: Stanolind Oil & Gas Co.'s Niblick 1, south offset to its discovery well of the Patterson pool, set casing on top of Patterson sand at 4728 ft, drilled out plug to 4733 ft for no shows and was coring ahead.

Trego County: Shallow Water Refining Co.'s Schaefer 1, SW NE 10-12s-21w, 4½ mi northwest of Gugler pool, drilled to 3650 ft in Kansas City-Lansing lime, acidized with 1000 gals, pumped 40 bbls oil and 75 bbls water in 24 hrs.

Ellis County: Deep Rock Oil Corp.'s Baumber 35, C EL NW SW 27-11s-17w, extends Bemis pool one location south, well good for state potential of 2000 bbls at 3598 ft in Arbuckle lime after acidizing with 5000 gals.

Nebraska

Sixth Producer at Berada As Line Starts Moving Oil

Skelly starts oil flow through new Barada pipe line and adds sixth oiler to new field; southwestern limits of Falls City field defined by Ohio duster.

Barada Pool: Skelly Oil Co. has started oil through line from Barada pool to Falls City loading rack, a distance of 10 miles. It also connects with the Midstates refinery and Independent Pipe Line Co. at Falls City. Skelly's Roesch 4, C W½ NE SW 36-3n-16e, is sixth oiler for the 1941 discovery, well drilled to 2420 ft in Hunton lime topped at 2374 ft, perforated 2400-20 ft, hole filled 2100 ft with oil in slightly less than 2 hrs, operator now testing; operators Roesch 5, C W½ NW NW Sec. 36, topped Hunton lime 2385 ft, high, now running casing operator's Mack 1, C W½ SW NW 25, location.

Falls City Pool: Ohio Oil Co.'s Bucholz 11, C NL NW SW 17-1n-16e, Richardson County, defines southwestern limits of the field, test drilled to 2307 ft in dry Hunton lime topped at 2289 ft; operator's Bucholz 9, SE NE SW Sec. 17, drilled to 2235 ft in Hunton lime topped at 2228 ft, production estimated 200 bbls daily on initial test; operator's Sandrock 8, NW SW NW Sec. 20, new start in northern limits of field.

West Texas

Barnhart Extended 4000 Feet Southwest

Second Ellenberger producer in Barnhart pool affords 4000-foot southwest extension. Pecos County's Ellenberger strike improves flow, and Delaware prospect to deepen. Third oil zone given Wasson field.

Reagan County: Amerada's University 1-R-B, C NW NE Sec. 8, Blk 48, flowed 520 bbls 45-gravity oil 7 hours ½-in tubing choke, gas-oil ratio 2187/1, having plugged back from 9230 ft to 9173 ft in Ellenberger, topped 9000 ft, elevation 2762 ft. Used 5000 gallons acid through perforations 9106-22 ft, broken saturation and porosity 9114-63 ft, being 103 ft lower structurally than top pay of discovery, which established new producing depth record for district. Due to each 160-acre tract being classed as separate lease, Amerada has stiff development obligation on University portion of block. Its University 1-R-D, 1½ miles east of discovery, drilling 4770 ft, and more work to be undertaken shortly to try and determine extent of producing area.

Pecos County: Gulf and L. H. Wentz's Millar 2, recent Ordovician strike 4½ miles south Girven and called Wentz area, awaiting official potential after flowing 176 bbls 32.6-gravity oil 24 hours following 5000-gallon acid treatment of lower pay. Gas volume rated 593,100 ft daily, although abundance of gas excluded by 7-in at 4282 ft, total depth 4383 ft in Ellenberger, topped at 4157 ft, elevation 2534 ft. Pure's T. P. Land Trust 1-A, extreme west portion county, changing to rotary at 5411 ft due to hole full water 5370 ft, and will explore lower Delaware. Showed for small oil pumper in Delaware sand, topped at 5082 ft, and assures follow-up explorations in area. Magnolia's Erickson-State 1, west offset 3950-ft Permian discovery on northeast flank Abell field, swabbed 25 bbls fluid, 5 percent bs&w, 22 hours, and to use acid through perforations 3850-80 ft. Gas volume subnormal. Prior to landing 7-in on bottom, drill-stem test 3838-3960 ft yielded sulphur water with oil show.

Gaines County: Amon G. Carter's Wasson 4-D, original deep test for the Wasson field, established third and deepest oil level in flowing 511 bbls 34-gravity oil initial, ½-in, partially on gas lift, after plugging back from water in Ordovician 11,108 ft to 7453 ft. Production is from lower Permian, and well treated with total 16,000 gallons acid through perforations 7055-7375 ft. Well topped Cisco series 8900 ft and Devonian 9980 ft, elevation 3564 ft, 5½-in 10,615 ft. Carter's Wasson 5-D, 1760 ft south above well, completed year ago flowing from broken pay 6210-6881 ft. Amerada's Hudson 1, wildcat and 4 miles west by south of above deep wells, failed to yield commercial production after nitro shot and acid in field's regular lime zone 4952-5016 ft, 5½-in 4900 ft, and is scheduled to deepen. Likins & Hall's Jones 1, wildcat in northwest portion county, fishing stuck drill pipe, total depth 6448 ft.

Deep Tests: Shell's Sealy - Smith 1, northeastern Ward County, drilling lime and chert 7955 ft. Drill-stem tests made at intervals in lower Permian, but results withheld. Stanolind's Williams 1, and Anderson-Prichard Oil Corporation and American Drilling Corporation's Ellwood-Honolulu 1, projected Clear Fork tests for Hockley County geophysical prospects, drilling at 5065 ft and 5960 ft, respectively, having proved dry in regular Permian. In Briscoe County, Phillips Petroleum Co.'s Montague 1 drilling hard dolomite 6310 ft.

Crockett County: Jacobs and Gibson Oil Corporation's University 1, SE NW SE Sec 5, Blk 29, 4 miles east by south Clara Couch pool, landed pipe below hole full water at 1653-57 ft to test nominal porosity and oil saturation 1748-75 ft, total depth 1848 ft. Humble's Owens 1, 1½ miles northwest of pool discovery, pumped 108 bbls 25-gravity oil initial, used 7000 gallons acid, broken pay 1905-2003 ft, elevation 2501 ft. This new producing area promises to be fairly large, but lacks pipe line outlet.

South Sand Hills: Standard of Texas' Barnsley 1, west offset to Ellenberger oil producer, abandoned 5845 ft, failed to make producer from dolomite, topped 5701 ft, 100 ft low, also dry in regular Permian after plugging back to 4330 ft. Shell's Barnsley 1, southeast offset this failure, drilling 5310 ft, having indicated commercial production when tester used 4164-4226 ft. Gulf's Waddell et al 32, C N¼ of S¼ Sec 18 and on strike between production, drilled plugs from 5½-in 5599 ft, total depth 5656 ft in Ellenberger, topped 5556 ft, being low.

North Texas

K-M-A Ellenberger Extended Mile East

Ellenberger production in K-M-A field extended mile east. South Electra shallow field has prospective Ellenberger producer. Deep wildcat in south Andrews to acidize. Clay County's Bend discovery makes big natural flow.

Ellenberger: Tide Water Associated Oil Co.'s Mangold 1-E, southwest part Blk 38, P. Castleman Survey, paved the way for additional deep drilling with mile east extension, flowing 104 bbls oil 3 hours ¾-in tubing choke, used 3000 gallons acid. Production from dolomite 4180-90 ft and 4202-11 ft, with dry lime to 4252 ft in Ellenberger, topped 4174 ft. Magnolia's Waggoner Est. 11-A, near C S½ NE SW HT&B Sec. 13, A-137, to acidize Ellenberger 3474-76 ft after drill-stem test yielded small volume oil-cut mud, 5½-in cemented 3464 ft. Originally completed as pumper at 1757 ft.

Archer County: Golding & Cochran's Kunkel-Sun 1, SW SW BBB&C Sec. 11, 3 miles north of Olney, awaiting acid treatment after yielding small show oil and gas on swabbing test, perforated 4878-94 ft in lower Bend, topped 4689 ft, plugging back from dry Mississippian 5237-5303 ft. R. H. Hawn et al's Edwards-Texaco 2, northeast outpost for Scotland pool, proved dry in Mississippian 5729-75 ft, testing after acid treatment through perforations 5229-55 ft in Bend, topped at 5230 ft.

Clay County: Continental's Spring 1, discovery that is possibly related to the Worsham uplift, earned potential rating of 431 bbls 48-gravity oil natural, 28/64-in tubing choke, gas volume rate 373,000 ft daily. Production from conglomerate 5587-5630 ft in Bend, topped 5582 ft. In New York City pool, Shell's Coleman 3-A, southwest edge of 6-well area, flowed 328 bbls oil 2 hours ¾-in tubing choke, used 3000 gallons acid through perforations 6313-60 ft in Mississippian, topped at 6224 ft.

Denton County: Hunt Oil Co.'s Jones 1, wildcat prospect in lower Bend, topped at 4085 ft, yielded small show oil and gas on swabbing test of perforations 5325-37 ft, plugged back from Ellenberger 5581-5633 ft, and will acidize. Second test on this lease abandoned 2446 ft.

East Texas

Houston County Wildcat Has Small Yield From Wilcox

South Houston County wildcat yields small amount oil on preliminary test in Wilcox. Trinity County deep prospect tests water.

Wilcox Strike: C. P. Culmore and Ed Gillespie's G. T. Lundy 1, John Forbes Survey and 1½ miles southeast of Lovelady, yielded unestimated volume of 23-24-gravity oil on preliminary swabbing test to indicate possible commercial pumper. Production is from 20 perforations at 3215-20 ft in Wilcox, topped at 2084 ft. Hole deepened from original 3500-ft depth contract to 5016 ft through aid supplied by British-American Oil Producing Co., then plugged back to cement 5½-in 3295 ft. This wildcat is 6 miles north by east of Kittrell pool, which yields 24-25-gravity oil with high lube content, from Carrizo near 2100-ft level.

Trinity County: Magnolia's Cameron 1, located on 5000-acre lease and 8 miles southwest of Groveton, tested salt water when swabbed down after perforating 22 shots 6702-06 ft in sand logged 6699-6796 ft, total depth 7315 ft in shale. String of 5½-in cemented with 700 sacks at 6929 ft after side-wall cores indicated possible production 6706-08 ft.

Southwest Texas

Wildcats Start in 15 Scattered Counties

First reports on wildcat operations in Southwest Texas included 21 operations scattered over 15 counties.

Brooks County: LaGloria Operators Committee's S. LaGloria 2, southeast side LaGloria structure, set casing 6950 ft to complete dual sand gas-distillate producer to extend field. Magnolia's Young 1, west flank of the field, passed up gas-distillate in 6600-ft sand, drilled to 7265 ft in Vicksburg and is plugging back.

Jackson County: W. S. Boyle's Rodesney 1, between Ganado and Mauritz fields, cored sand 5065-90 ft, drill-stem test 140 ft 26-gr oil; 400 pounds pressure, ¼ and ⅜ open 12 min; drilling to 7000-ft contract; new field or extension. Francitas Gas Co.'s Viets 1, west side of Francitas field, found no shows to 7500 ft and abandoned.

Wasson Rules

The rules for the Wasson field, Gaines and Yoakum counties, have been amended by the Texas Railroad Commission to allow taking of potential tests on wells producing by air or gas lift.

Texas Gulf Coast

Production Opened on East Flank Nash Dome

Production opened on east flank Nash Dome; producer extends Fig Ridge field ¾ mile; Newton County wildcat may drill deeper in Wilcox.

Fort Bend County: Atlantic Refining Co. has opened production on east flank Nash Dome, a salt plug long dormant but which produced some oil several years ago. Groce 2 tested in perforations first at 4294-4312 ft, flowing 86 bbls 19-gravity oil in 10 hours on drillstem; sanded, pipe reperforated 4294-4302 ft, flowing through 3/16-in choke with 675 pounds tubing pressure. Atlantic has 3300 acres around the dome, the well being in the T. Alsbury survey. Bottom is 5216 ft.

Chambers County: Sun Oil Co. has extended Fig Ridge ¾ mile southwest, McCarthy 1 flowing 120 bbls oil in 17 hours through ⅛-in choke from perforations in 8500-ft Frio. While testing showed 1300 pounds tubing pressure, gas/oil ratio 640/1. The Texas Co. recently extended the field south with Broussard 4 flowing from perforations at 8492-8515 ft, total depth 8597 ft.

Rowan Drilling Co. has set pipe in Land 1, wildcat on South Anahuac prospect, Chambers County. Several sands and shales were cored showing gas and some saturation. Cores taken at 8965-8993 ft recovered sandy shale; 8993-9014 ft gas, no saturation; 8747-87 ft gas and some oil saturation.

Newton County: H. C. Cockburn ran electrical log to 9375-ft bottom in Texas A. & M. College-State Forest 1, John T. Lewis survey, three miles southwest of Bleakwood. Gas shows in top of Wilcox, is not believed sufficient to make producer. Plans being made to drill deeper.

Wildcats: Superior Oil Co. has staked location for 9000-ft test in South Liberty area, Liberty County; Smythe 1 is on a 3000-acre lease in William D. Smith league.

Shell Oil Co. is drilling around 8900 ft in Hintz 1, Wilcox wildcat, Sealey area, Austin County. Little information is being released.

Louisiana Gulf Coast

Production Opened in Delacroix Island Area

First commercial production opened at Delacroix Island; Octave Pass field extended, gets new shallow sand; new deep sand tested in University field area.

Plaquemines Parish: Texas Co. opened first oil production at Delacroix Island, Delacroix Island 2 flowing 335 barrels 37.6-gravity oil daily 3/16-in choke perforations 8955-70 ft. Well is 1½ mi southeast of discovery gasser, completed May, 1941, flowing 3,500,000 gas from perforations 8915-25 ft. Depth of second well is 10,552 ft. Both wells had several sands 8900 ft to 10,100 ft, some showing salt water and gas.

Details have not been announced on Texas Co.'s shallow discovery at Octave Pass, Plaquemines Parish, however, second well extended production westward thus indicating the field may be major reserve. Delta Duck Club 1 flowed 457 barrels 45.6-gravity oil daily through 5/32-in choke with 3900 pounds tubing pressure, gas-oil ratio 1672/1. Total depth is 11,162 ft. The discovery, State-Octave Pass 1, was completed in April, 1941, for 195 barrels daily from perforations at 11,370-400 ft, total depth 11,494 ft.

East Baton Rouge Parish: William Helis is testing Nelson 12, south end of University field, in deeper sand bodies. Bottomed at 10,017 ft, the well, if productive, will open a large area to further drilling.

Evangeline Parish: L. M. Josey et al, Houston, have made tentative location for Haas 1, wildcat on south flank Pine Prairie dome. It will be an 8500-ft Cockfield test with Dixie Drilling Co, contractor. Gulf has started Easton Station 1 on 16.39 fee acreage in 37-3s-1w.

Beauregard Parish: Atlantic is testing Hawkins 1, deepest well in Neale Wilcox field. It is understood several tests will be made in hitherto untested horizons. Well was drilled and cored to 12,575 ft, casing set at 12,549 ft.

Iberia Parish: Shell has located Smith 1 on Weeks Island dome. Company holds large block on north, east and southeast side of the salt plug. Five wells have been drilled on prospect, all finding salt, which is around 100 ft deep on top of dome. Gulf holds leases on west flank. New location is 1500 ft west and 200 ft south of NWc 18-14s-7e.

Wildcats: H. C. Cockburn and H. L. Hunt are preparing to drill 7500-ft Wilcox test in Marksville area, Avoyelles Parish, on Boyette lands. Operators have large block, tentative location being in 5-2n-5e. Avoyelles Parish has prolific Wilcox production at Eola, discovered early in 1939.

Cities Service is drilling below 10,367 ft in Lacassine 1, deep wildcat on Thornwell prospect, Jefferson Davis Parish. No shows have been encountered, hole may be drilled either to 10,500 or 11,000 feet.

North Louisiana

Second Producer in Pettit at Haynesville

Second Pettit sand producer for Haynesville; LaSalle Parish wildcat shows oil; two Olla trend wildcat locations.

Haynesville: Ohio Oil Co.'s Taylor 1, Account 15, SE SE 15-23n-8w, drilled below 11,000 ft several months ago, plugged back and completed last week in Pettit (basal Glen Rose) lime, gauging 278 bbls oil in 10 hrs through ⅛-in tubing choke, after perforations with 47 shots at 5218-30 ft; tubing pressure 670; casing pressure, 450 pounds. Used 3000 gallons acid. Pettit horizon recently found productive at Haynesville in T. L. James' Akin 1, NW NE 21-23n-8w.

LaSalle Parish: Carter and Phillips' Tensas Delta D-1, SE NW 25-6n-3e, shot casing 21 shots 4294-98 ft, flowing rate of 300 bbls fluid, part wash water, part 40.8-gravity oil several hours, then salt water; squeezing off to reperforate.

Wildcats: Atlantic applied for permit to drill Catahoula Lake 1, C SE NW

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27-7n-4e, Catahoula Parish, in lake bed; Carter recently made two locations same lake. Placid Oil Co. spudded Grant Parish wildcat, Goodpine F-122, SW SE 2-8n-2w.

Arkansas

Contract Gas Cleaning Plant at McKamie

Contract let for McKamie plant; La Fayette County wildcat logs oil show in Smackover lime; forty acre spacing for Mount Holly.

McKamie: Organization of McKamie Gas Cleaning Co. to extract hydrogen sulphide from McKamie "sour gas" and then take gasoline from the purified product, announced. F. H. Lerch, president of Interstate Natural Gas Co. subsidiary Standard Oil Co. of New Jersey, heads McKamie company, which is owned by Atlantic Refining Company and Standard of New Jersey. Contract for construction of new plant awarded to Girdler Corporation. R. A. Howe, production superintendent Carter Oil Co.'s southern division to be vice president new firm and general manager of plant. McKamie has 15 gas-distillate wells, most of them owned by Atlantic and Carter.

LaFayette Wildcat: Barnsdall Oil Co.'s Bond 1, NW NW 11-15-24, was preparing to run casing for production test, after topping Smackover lime at 6250 ft and coring to 6320 ft. Exact depths withheld. Lime carried good porosity and permeability with show oil.

Mount Holly: Arkansas commission has set 40-acre spacing for Mount Holly field, Union County, with per-well top allowable 200 bbls.

Michigan

Clare County Well Flows After Casing Delay

Continental Oil Co.'s Turner 1, NE SE NE 15-3s-4w, Calhoun County, carried 4,000,000 gas in Traverse lime at 1605 ft, and shut down for orders. Top lime tentatively checked at 1586 ft. Wildcat originally started for St. Peter test.

H. J. Hirzel's Oxendale 1, 36-18n-5w, Clare County, completed for 210-235 bbls oil day from Dundee at 3941 ft, after 6 weeks delay in getting 5-in producing string set. Hirzel and other lease holders in district have asked state authority to develop field on 20-acre diagonal spacing pattern.

Roscommon Field: Sun Oil Co.'s State A1, N½ NE SW 33-21n-3w, Roscommon County, logged Traverse objective 9 ft high at 3236 ft, and completed at 3425 ft for 160 bbls oil first 24 hours to extend field half mile west.

Sun's Bauman 1, N½ SW NE 29-24n-1w, Roscommon County, averaged 83 bbls day first six days from Monroe lime at 4201 ft, following 500 gallon acid treatment.

VIRGIL C. HOGAN, 63, retired Mid-Continent oil operator, died December 20 at Denison, Texas, where he had resided 10 years, having previously lived in Tulsa 15 years.

California

Old Kern County Well Will Get Retesting

New effort to be made in old Kern County area; Los Angeles County wildcat abandoned.

Kern County: The Texas Co. has taken over for a retest the old Union Oil Co. Bowerbank 4-23 wildcat, 23-29-24, Buttonwillow - Bowerbank area. Drilled to 12,144 ft by Union, plugged to 11,859 ft, swabbed 180 bbls oil, mud and water cutting from 50 to 96 percent during 36 hour period from interval 10,776-10,824 ft.

Los Angeles County: Graham-Loftus Oil Corp. has abandoned Perkins 2, wildcat in the East Coyote area, 13-3-10. Well bottomed in gray sand at 4687 ft, tested wet.

Rocky Mountain Area

Two Fields Extended And Another in Prospect

Extension of Elk Basin field, Wyoming, ¾ mile south for gas appears imminent. Cut Bank gas pool, Montana, extended 1¾ miles west, while Lander pool Sunburst production, Cut Bank, extended quarter mile north.

South Elk Basin: Mackinnie Oil & Drilling Co.'s Old Colony 1, C NL NW NW 5-57n-99w, ⅜ mile ahead production, apparently will prove up 1500 acres comprising extreme south fault block of Elk Basin oil and gas field Park County, Wyoming. Semi-wildcat showed estimated 3,000,000 ft gas daily under tested 700 lb r.p. dr stem open 30 minutes seated 3142 ft atop Dakota sand with hole bottomed 3 ft below First Dakota into variegated shale break separating from Second Dakota, td 3157 ft. Cemented 5-in production string 3140 ft, standardizing to drill plugs, and test. Gas showing some distillate, believed down structure well would develop oil in First Dakota. Dakota gas wells drilled mainly developed area field had initial rock pressure 900 pounds, now dropped to 400 pounds indicating deep seated fault giving independent closure to south block.

Cut Bank Extenders: Big West Oil Co.'s Dahlquist 1, C NW 6-34n-4w, completed 6,600,000 ft gas daily, 700 lbs r.p., 2207-2256 ft, Lower Cut Bank sand, 1¾ miles east nearest gasser Cut Bank field, Glacier County, Montana. New well affords gas supply Big West's refinery, Kevin, 11 miles east. Company preparing to lay 4-in line. Big West spudding Dahlquist 2, C SE 6-34n-4w, ¾ mile southeast No. 1.

Two and a half miles northeast of Lander 1, which has produced upwards of million and quarter dollars of oil, Santa Rita Oil & Gas Co. completed Tribal 15, SW SE NE 3-35n-6w, 468 bbls flowing production initial, for second Sunburst sand oil well, Cut Bank field. Pay at 2960-2975 ft, Upper Sunburst sand, which as producing strata trends in narrow strip 2½ miles northeast-southwest in Lander area.

Wellington Purchase: Fred Goodstien, president American Iron & Metals Co., Casper, Wyoming, and associates purchased Continental Oil Co. properties making up the entirety of the Wellington and Fort Collins oil fields, Larimer County, Colorado. Union Oil Co. drilled discovery well at Wellington, November, 1923, which made 80,000,000 ft gas initial Muddy sand 4285 ft, soon went to oil, sold properties to Continental 1929. Fort Collins field discovered in 1924. To end 1941, two fields produced 7,156,500 bbls oil showing per-acre yield 5112 bbls for 1400 proved acres. Two fields have 17 wells producing at present.

Humble Increasing Line Capacity Out of Hawkins

Humble Pipe Line Company is providing additional outlet for Hawkins, most active drilling area in East Texas, through installation of a 5-mile 8-inch unit to parallel its 6-inch line that ties into the Van-Shreveport 10-inch "sour" oil carrier. Second outlet for Hawkins is underway, involving Roger Lacy et al's 12-mile 4-inch line to Gladewater, where connection will be made with a converted gas line in making deliveries to Lacy Refining Company's refinery at Kilgore. The latter has been processing 1000 barrels of Hawkins crude daily for some weeks.

Shell Oil Co. recently contracted for 480,000 barrels of Hawkins crude to be delivered by Humble Oil & Refining Co. and Standard Oil Co. of Louisiana during 1942. The crude will be transported by pipe line to Baton Rouge, thence via barge to Shell's Norco refinery.

Two More Tankers Launched on East Coast

Two more tankers have been launched on the Atlantic Coast. The larger, Socony-Vacuum Oil Company's 130,000-barrel Catawba, was launched last week in the Sparrows Point, Md., yard of Bethlehem Steel Company. Keel was laid July 8. Cargo space is divided into 24 compartments to allow carrying of many grades of oil. Loading and unloading time is about 16 hours. Two other similar ships for Socony-Vacuum are being built at Sparrows Point.

The smaller tanker, the 13,000-barrel George Whitlock 2nd, was launched week before last at the Camden, N. J., yards of the R.T.C. Shipbuilding Corporation for Ira S. Bushey Sons Company of Brooklyn. It will be operated under lease by Spentonbush Fuel Transportation Company, New York.

Plan Carbon Black Plant In Noble County, Oklahoma

Charles Eneu Johnson & Company has requested permission of Oklahoma Corporation Commission for construction and operation of a carbon black plant to be located in Noble County. Tentative agreement has been reached with Shell Oil Company for gasoline plant residue gas now estimated at about 8,000,000 cubic feet per day. The construction would entail expenditures amounting to a half million dollars.

Safety Record

Employes of Atlantic Pipe Line Company have completed more than 1,000,000 work hours without a disability accident, according to J. Harry Wood, Jr., of Dallas, vice president. The record covers men engaged in pipe line operations as well as construction.

UNITED STATES WELL COMPLETIONS

California

Company, Well and Location	Init. Prod. Bbls.	Depth
Fresno County (East Coalinga Eocene)—		
S. Lytel, No 74-7F	1330	8217
Fresno County (Riverdale Area)—		
Amerada, Lawton 45-26	558	8311
Kern County (Coles Levee)—		
Richfield, KCL-B 72-31	302	8932
Kern County (Edison)—		
Wood Callahan Oil Corp., Kohn 1	180	3692
Kern County (Greeley)—		
Standard, KCL 11-31	3578	115-10
Superior, D. O. Moore 2	1648	11490
Kern County (Mount Poso)—		
General, Heisen 3	235	1955
Ring Oil Co., Vedder 2	•	1485
Shell, Griffith Fee 2	305	1800
Kern County (Mountain View)—		
Richfield, Mott 2	50	6355
Kern County (Rio Bravo)—		
Superior, Osborne 3-3	1610	11465
Kern County (Ten Sections)—		
Shell, KCL A-55-30	293	8210
Los Angeles County (Dominguez)—		
Union, Callender 80	830	7414
Los Angeles County (Inglewood)—		
Texas, RC Smith 8	605	8412
Los Angeles County (Rosecrans)—		
J. Paul Getty, Athens 2-12	140	8100
Los Angeles County (Wilmington)—		
A. D. Mitchell, Liggett 1	No. Est.	3700
St. Anthony Oil Corp., W. McComb 1	190	3710
Union Pacific, UP 210	2124	2715
Orange County (East Coyote)—		
Bartholomea Oil Corp., Stern 11	460	6887
Orange County (Huntington Beach)—		
H. C. Morton, Brooks 5A	90	3844
Southwest Explo. Co., State 44	280	5405
West American Oil Co., Ashton 9	129	4553
Santa Barbara County (Santa Maria Valley)—		
George F. Getty, Vicente 5	350	4616
Ventura County (Rincon)—		
CCMO Co., Hobson C-3	148	10515
Hobson C-9	33	9337
Richfield, Hobson State F-9	75	3800
Ventura County (Ventura Avenue)—		
Tide Water, Lloyd 114	609	9394

•Failures; †Junked; ¶Million cu. ft. gas.

Illinois

Company, Well and Location	Init. Prod. Bbls.	Depth
Bond County—		
A. J. Hausemann, Dyer "A" 3, sw sw se 3-6n-2w	35	1022
Clay County—		
B. F. Williams, Nolan 1, s½ se nw 10-2n-7e	3608	3083
Gulf, Hastings 1, sw se sw 12-4n-7e	•	3066
Keck 2, ne se se 26-4n-7e	146	2317
Carl Robinson, Brisby 1, sw se ne 34-4n-7e	•	2607
Coles County—		
Olan Humphries, Fee 1, c ne 13-13n-10e	•	945
The Carter Oil, Haybrook 1, c e½ se sw 2-13n-7e	58	1842
Edgar County—		
Raymond H. Pogue, Honnold 1, nw sw ne 14-12n-14w	•	130
Effingham County—		
E. Frank Jones et al, Leith 2, nw se nw 27-6n-5e	38	2330
Fayette County—		
Homer Luttrell et al, Aukamp 1, c nw nw ne 31-5n-3e	150	1906
Carter Oil, Doty 2, se ne se 1-8n-3e	54	1523
Brauer 6-D, c s se 21-8n-3e	250	4679
Dial 10-D, c ne nw 33-8n-3e	250	3069
Oils, Inc., Wood 4-D, c e½ ne se 16-8n-3e	•	3199
Franklin County—		
Smokey Oil Co., Odum 1, ne se ne 11-6s-2e	125	2726
Shell, McKamie "B" 5, sw sw nw 30-6s-3e	103	2149
Gallatin County—		
Phillips, Egyptian T & T 9, ne ne ne 16-8s-10e	44	2098
Hamilton County—		
Tuesday Oil Co., Hazel Hall Phillips 2, nw nw sw 26-6s-6e	240	3099
Pure Oil, Cuppy 22, nw sw sw 6-6w-7e	69	3001
Mid-Sun Oil Corp., Babler 1, s½ sw se 36-4s-5e	•	3541
Reward Oil Co. et al, Lockwood 3, sw sw sw 14-6s-5e	1200	3134
Shell, Braden Ch. Comm, 3, se nw sw 13-6s-5e	601	3413
Lockwood 3, ne nw nw 13-6s-5e	147	3315
Texas Co., Lockwood 6, se sw se 13-6s-5e	690	3291
Lockwood 5, ne se sw 13-6s-5e	700	3370
Hall 1, e½ se nw 27-6s-6e	41	3094
Jasper County—		
Pure Oil, Cunningham 2, c w½ ne se 19-5n-10e	22	2860
Jefferson County—		
Clark Nye et al, Purcell 1, nw nw sw 22-1s-2e	•	1939
L. B. Jackson, Myers 3, c se se ne 34-2s-1e	83	1998
Kingwood, Bank of Woodlawn 9, nw se nw 35-2s-1e	170	1968
Nation Oil Co., Piper 7, ne ne nw 1-3s-1e	125	1986
Piper 8, sw ne nw 1-3s-1e	150	1983
Magnolia, Kaminski 3, nw se se 2-3s-1e	13	1999
Robinson-Puckett Inc., Holshouser Est. 1, sw sw nw 5-4s-4e	•	3189
Lawrence County—		
Kentucky Nat. Gas Co., Gwinn 4, e½ nw ne 18-4n-10w	•	827
Marion County—		
A. J. Hausmann, Ducomb 1, sw sw sw 7-3n-1e	•	1465
Richland County—		
Pure Oil, Frost 4, e½ nw sw 9-3n-9e	•	2601
St. Clair County—		
Ralph Hussong, Fee 1, ne sw nw 21-1s-6w	•	690
Wabash County—		
Dean & Morten, Sanford 3, se se nw 21-1s-12w	5	2330
W. W. Gray, Fee "A" 21, nw ne sw 14-3s-14w	100	2539
Longhorn Oil Co., Helm 25, ne sw nw 23-3s-14w	125	2179
Hilton Oil Co., Skelton 1, nw ne sw 36-1n-14w	•	2964
Wayne County—		
Olson Drlg. Co., Weaber 1, n½ se nw 1-1s-6e	170	3255
States "B" 1, w½ nw sw 36-1n-6e	164	3289
Ohio Fuel Supply Co., Clark 2, n½ ne nw 28-1n-6e	276	3240
Aetna Oil Co., Jamison 2, 31-1n-7e	•	3325
Shell, Porter 2, w½ sw se 36-1n-6e	76	3268
Pure Oil, C. R. Orr "A" 1, w½ ne sw 12-1n-7e	•	3087
Brummett Cons. 1, e½ nw se 28-2n-8e	•	3090
McConnell 2, s½ sw nw 32-2n-8e	•	3080
White County—		
J. R. Thompson, Bryant 1, ne nw ne 26-6s-8e	1	3035
Pure & Carter, Neel 2, sw ne ne 18-6s-9e	104	2800
Carter, McGill 1, sw se ne 15-7s-8e	161	3089
The Texas Co., Poorman 16, se ne nw 30-3s-8e	20	3236

Summary of Drilling Operations in the United States, Week Ended December 27, 1941

	WELLS COMPLETED								[1]PERMITS FOR NEW WELLS				
		New Wells Drilled for Oil and Gas											
	Total for Week	Oil Wells	Gas Wells	Failures	[3]Miscellaneous	Initial Production	Total 1941	Total this Date 1940	This Week	Total this Month	Total 1941	Total this Date 1940	Year Total 1940
Alabama	.....	.....	.....	.....	.....	.....	5	10	.....	.....	.....	.....	.....
Arkansas	.....	.....	.....	.....	.....	.....	185	179	4	11	184	153	153
California	27	26	.....	1	.....	16,152	1,199	1,091	26	86	1,180	1,042	1,042
Colorado	.....	.....	.....	.....	.....	.....	21	10	.....	.....	.....	.....	.....
Florida	.....	.....	.....	.....	.....	.....	1	2	.....	.....	.....	.....	.....
Georgia	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
Illinois	64	42	.....	19	3	11,112	3,961	3,958	104	382	4,769	4,532	4,532
Indiana	13	6	1	6	.....	958	546	531	12	63	[2]339	.....	.....
Iowa	.....	.....	.....	.....	.....	.....	6	1	.....	.....	.....	.....	.....
Kansas	43	21	5	14	3	20,669	2,217	2,002	43	193	2,357	2,048	2,048
Kentucky	4	2	.....	2	.....	45	334	367	8	38	[2]225	.....	.....
Louisiana	16	12	.....	4	.....	3,172	1,557	1,708	35	138	1,753	1,658	1,658
Michigan	22	15	3	4	.....	23,970	886	1,192	40	131	1,027	1,093	1,093
Mississippi	.....	.....	.....	.....	.....	.....	198	186	.....	.....	.....	.....	.....
[4]Missouri	.....	.....	.....	.....	.....	.....	65	33	.....	.....	9	26	26
Montana	8	4	3	1	.....	930	252	199	.....	.....	.....	.....	.....
[4]Nebraska	1	1	.....	.....	.....	501	92	50	.....	.....	95	69	69
New Mexico	12	8	1	3	.....	1,335	407	623	12	33	411	559	559
New York	33	18	.....	.....	15	117	1,120	957	.....	.....	.....	.....	.....
Ohio	25	13	7	5	.....	493	1,774	1,132	.....	.....	.....	.....	.....
Oklahoma	48	28	3	16	1	10,665	2,158	2,152	46	171	2,335	1,888	1,888
Pennsylvania	10	1	6	1	2	20	3,608	3,283	.....	.....	.....	.....	.....
South Dakota	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....
Tennessee	.....	.....	.....	.....	.....	.....	16	12	.....	.....	.....	.....	.....
Texas	192	142	4	42	4	60,238	10,439	9,791	263	925	12,173	11,170	11,170
Utah	.....	.....	.....	.....	.....	.....	3	3	.....	.....	.....	.....	.....
West Virginia	15	3	10	2	.....	38	772	651	.....	.....	163	782	782
Wyoming	1	.....	.....	1	.....	.....	135	155	.....	.....	.....	1	1
Total this week	534	342	43	121	28	150,415	31,958	30,279	593	2,171	27,020	25,021	25,021
Total last week	600	351	64	146	39	180,860	31,424	29,826	561	1,578	26,427	24,662	25,021
Total this year	31,958	19,542	2,554	6,969	2,893	8,803,666	.....	.....	.....	.....	.....	.....	.....

[1]This tabulation includes those states where weekly data are available; figures for Missouri date from August 10, 1940; Nebraska from August 3, 1940.
[2]No data available before June 14, 1941.
[3]Includes old wells deepened, water-intake, gas input, and salt water disposal wells.

United States Well Completions—*Continued*

ILLINOIS—Continued

White County—

Company, Well and Location	Init. Prod. Bbls.	Depth
Cherry, Kidd & Gray, Kerwin 2, nw ne se 30-3s-8e	•	3365
Tide Water, Evans 9, s½ se nw 4-4s-14w	333	2815
Bacon 5, se se ne 5-5s-14w	43	2747
Bacon 6, se ne se 5-5s-14w	60	2873
Superior, Ford 7, se nw sw 23-4s-14w	12	2863
Ford et al "D" 16, se se nw 34-4s-14w	65	2597
Ford et al 20, c nw sw sw 4-5s-14w	•	2880

OLD WELLS DEEPENED

Hamilton County—

Kingwood, Johnson 2, nw se ne 14-6s-5e (otd 3200)	215	3249

Marion County—

Texas Co., Wayman 23, sw ne ne 31-2n-2e (otd 4545)	42	4626
Stroup 16, se sw se 30-2n-2e (otd 4604)	28	4647

Indiana

Daviess County—

Hargarcho Oil Co., Gaither 10, sw ne sw 21-2n-7w	•	1300
R. D. Brown, Inc., McCracken 5, s½ se se 16-2n-6w	¶445.0	754
J. W. Cannon, Carlin 1, sw nw ne 8-2n-5w	5	741

Gibson County—

Hall Edwards, Rec., Maier 50, c s½ sw 31-2s-13w	424	2499
Continental Oil, Bozeman Land 56, nw ne sw 23-3s-14w	180	2172

Harrison County—

Harrison Develop., Brown 1, ne se se 30-3s-4e	•	835
J. W. Greist, Steepleton 1, sw ne sw 20-5s-4e	•	265

Posey County—

Sells Petroleum, Hickam-Elliott 1, sw se se 14-5s-14w	•	3084
John Lindas et al, Pfeffier 1, c sw nw sw 6-6s-12w	•	1211
Lloyd Sloan et al, Seifert 2, e½ w½ nw 30-6s-12w	95	1109

Pulaski County—

Herman Erb, Albrecht 1, ne ne sw 9-29n-4w	•	931

Spencer County—

George Hedges, Eble 2, se se nw 7-7s-7w	150	1039

Vigo County—

Sioux Co., Williams 8, w½ e½ se 32-10n-10w	104	2208

Kansas

Barber County—

Barbara Oil & Gas, Wilson-B 1, c nw 20-33s-13w	22.842	4652

Barton County—

Texas Co., Birzer 2, c n½ se se 2-19s-11w (pb 3288)	36	3374
Sinclair-Prairie, Harzman 2, sw sw se 33-16s-11w	2338	3336
Cities Service, Kosar 5, c w½ e½ se 5-16s-13w	•	3415
Phil-Han & Skaer, Grossardt 1, ne ne se 17-17s-11w	•	3365

Butler County—

Cities Service, Wilson 208, sw nw se 8-25s-5e	15	2031
Adair & Morton, Thomas "B" 2, sw nw se 10-28s-7e	343	2780

Edwards County—

Falcon Seaboard, Newsom 1, nw nw se 1-26s-18w	•	4939

Ellsworth County—

L. W. Pruntz, Skalicky 3, c w½ ne nw 9-16s-10w	•	3315

Greenwood County—

H. A. Miller et al, Grundy 1, ne nw sw 7-27s-11e	10	1903

Harvey County—

Alf Landon et al, Gray 1, nw nw ne 15-22s-2e	•	3083

Jefferson County—

Hatcher & Fisk, Schraeder 1, c nw sw 29-9s-20e	15.900	1430
Kimmel 2, c nw nw 5-10s-20e (pb 1518)	.75	1530

Leavenworth County—

Mossbacker, Locke 1, c ne sw 19-9s-21e	•	1505

Marion County

C. R. Brosius et al, Funk 1, c w½ sw ne 13-19s-2e	•	2915

McPherson County—

M & L Oil, Johnson 1, c w½ sw se 7-17s-3w	759	3354
T. C. Johnson & Darby, Shaw 1, nw nw sw 21-19s-1w	60	3432
Shawver, Weaver 1, c s½ ne nw 1-20s-1w	23	2917

Ness County—

Hunt Oil, Ryerssee 1, c sw ne 35-18s-21w	•	4300

Norton County—

Helmerich-Payne et al, Central Trust 1, c e½ se ne 25-2s-23w (pb 3628)	•	3661

Osborne County—

Vickers Pet., Koelling 1, c s½ se se 31-9s-15w	•	3414

Pawnee County—

Stanolind, Paramore 1, c s½ n½ se 11-23s-17w	•	4343

Phillips County—

Cities Service, Pinkerton 4, ne se sw 29-5s-20w	2117	3609
Solt 1, ne ne sw 31-5s-20w	2044	3634

Pratt County—

Central Pet. et al, Ward 1, c e½ se nw 11-26s-12w	¶3.729	4320
Parker Drlg., Bucklin 1, c n½ ne ne 11-28s-11w	¶5.920	4269

Reno County—

Hall & Kessler, Anderson Est 1, c n½ nw sw 8-24s-10w	•	3910

Rice County—

McPherson Drlg., Cramm "D" 4, c n½ s½ sw 15-19s-9w	Input	3718
C. W. Weaver, Link 2, c s½ ne sw 18-19s-9w	•	3319
Herndon Drlg., McGlynn 1, c e½ se sw 4-20s-9w	236	3248
Gulf, Hirsh 3, c n½ sw ne 18-20s-10w	230	3307

Russell County—

Stanolind, Boxberger 7, c e½ se sw 14-14s-14w	644	3068
Cities Service, Strecker "B" 5, c e½ se ne 36-14s-14w	1552	3135
Zeman 2, ne sw nw 3-15s-12w	•	3232
Sidey & Carey, Phillips 1, c s½ sw ne 34-15s-11w	57	3317
R. H. Shields, Rogg 6, c n½ ne nw 9-15s-13w	353	2991
J. Royen, Flegler 1, c n½ ne ne 1-15s-14w (pb 2869)	60	3185
Phillips Pet., Mai 2, nw se se sw 15-15s-14w	431	3336

Stafford County—

Texon Land & Dev. Co., Schaeffer 1, c w½ sw sw 3-21s-13w	406	3558
Stanolind, O'Conner 3, c e½ nw nw 14-24-12w	3000	3842

Trego County—

Aylward & Barnett, Schaefer 1, sw sw ne 10-12s-21w (pb 3650)	30	4005

OLD WELLS DEEPENED

Sedgwick County—

Roy Ramsey, Davier 1, sw sw sw 17-27s-2e (otd 2987)	15	3251

Stafford County—

Stanolind, Fuller 2, ne ne sw 11-24s-11w (otd 3750)	2940	3780
Hays 2, nw nw se 11-24s-11w (otd 3753)	3000	3795

Kentucky

Daviess County—

Walter Sargent et al, Hagan 1(2), 11-P-27	40	1038

Hancock County—

Henry Scholl, Parrott 3(10), 17-P-33	5	537

McLean County—

Andrew Teller, Crabtree 1, 19-N-28	•	1724

Union County—

Sun Oil Co., Samples 1, 21-P-19	•	2625

South Louisiana

Acadia Parish (Wildcat)—

Stanolind, Tweedel 1	211	10300

Cameron Parish (Lakeside)—

Superior, Paggie 1	58	11059

Cameron Parish (Cameron Meadows)—

Magnolia & Humble, Cameron Meadows 36	•	1600

Evangeline Parish (Ville Platte)—

Continental, Albert Tate 3	398	10121

Iberville Parish (St. Gabriel)—

Shell, Natalbany Lbr. Co. 4-B	237	8720

Iberville Parish (Bayou Blue)—

Superior, Schwing 19	120	6039

Jefferson Parish (Lafitte)—

Texas Co., Rigolets 15	327	10185

Orleans Parish (Unknown Pass)—

W. T. Burton, State-7-318	50	9897

Plaquemines Parish (Octave Pass)—

Texas Co., Delta Duck Club 1	457	11071

St. James Parish (LaPice)—

Shell, Federal Land Bank 3	•	11852

Plaquemines Parish (Delacroix)—

Texas Co., Delacroix Island 2	335	10552

St. Charles Parish (Paradis)—

Texas Co., LLE-Paradis 15	454	10440

St. Landry Parish (Fort Barre)—

Texas Co., Botany Lbr. Co. 32	236	5962

St. Mary Parish (Bayou Sale)—

Shamble, Canal Bank 2	259	10260

St. Mary Parish (Belle Isle)—

Sun, Belle-Isle State 4-350	•	564

Iberia Parish (Fausse Point)—

Sun, Planters Lumber Co. 10	•	8144

Michigan

Allegan County—

Voorhees Drilling Co.'s Puschell B1, ne sw se 18-3n-12w	•	1567
Regal Dutch Pet. Co.'s Wamhoff 1, sw nw ne 18-3n-12w	185	1551
Clapsaddle & Harris Lindsley 1, sw ne sw 20-3n-12w	•	1682
Regal Dutch Pet. Co. Niera 1, e½ ne ne 12-4n-14w	•	1628

Arenac County—

W. E. Ross Sinn 1, n½ s½ ne 17-19n-4e	¶3	1512
E. G. Thompson Popsiadlik 2, ne nw se 26-19n-3e	20	2078

Clare County—

H. J. Hirzel Oxendale 1, se ne se 36-18n-5w	215	3941

Isabella County—

Rex Oil & Gas Co. Babcock 1, ne sw ne 18-13n-6w	•	3591

Osceola County—

Gordon & Kale Loucks 1, c n½ ne se 20-18n-10w	1100	3587
Pure Richards A1, c s½ nw nw 20-18n-10w	5200	3605
Reeber 1, c s½ ne nw 32-18n-10w	4400	3611
Ohio Gabel-Weck 1, c s½ ne se 31-18n-10w	7000	3585
C. W. Teater, Baderschneider 4, c n½ nw sw 30-18n-10w	200	3620
C. L. Maguire, Williams 2, c s½ sw se 32-18n-10w	1200	2928
Taggart Bros. Co., Cook 2, c ne 27-18n-8w	¶3	1415
Turner Pet. Corp., Hazard 1, c se 12-18n-8w	¶½	1537

Ottawa County—

J. C. Newell, Rapp 4, se ne sw 23-7n-13w	20	1880

Roscommon County—

Sun, Bauman 1, c n½ sw ne 29-24n-1w	70	4201
Freeman Oil Co.'s State A2, c n½ ne sw 34-21n-3w	4100	3425

Van Buren County—

E. G. Hartman Ampey 1, se se sw 2-1st-14w	150	1290
W. E. Dotson's Holderman 4, ne se ne 11-1s-14w	70	1292
R. D. Malcolm's Allen 2, sw sw nw 12-1s-14w	40	1296

Montana

Glacier County (Cut Bank)—

Big West Oil Co., Dahlquist 1, cnw 6-34n-4w	¶6	2256
A. B. Cobb & Co., Tribal 2-206, sw nw sw 19-32n-5w	345	3012
Consolidated Gas Co., Frary-Tribal 3-172, sw nw nw 18-32n-5w	225	2850
R. C. Jeffries Tribal 2-197, sw sw nw 30-32-5w	350	2985

Toole County (Kevin)—

Coolidge & Coolidge Jones 3, csl se sw 28-34n-1w	¶¼	1325
Kalispell-Kevin Oil Co., State 4, sec sw 16-34n-1w	¶¼	1228
Gordon Plotke Ward 4, nw sw sw 28-35n-3w	10	1719
Superior Petroleum Corp. Govt. 4, cse nw 24-35n-3w	•	1672

Nebraska

Gage County—

Watt Rider et al, Warren 1, c ne ne 21-3n-5e (pb 2340)	•	2858

Richardson County—

Skelly, Roesch 3, c w½ sw nw 36-3n-16e	501	2505

New Mexico

Donna Ana County (Wildcat)—

Al Parker et al, Simmons 1-X, swc se se 35-22s-5e	•	2270

Eddy County—

Danciger, Turner 13-A, c ne se 18-17s-31e	125	3458
Turner 4-B, c se sw 17-17s-31e	160	3430
Allan Hargrave et al, fee 1, se ne nw 15-20s-30e	200	1615
Jas. E. Hughes et al, Brooks 7, se sw nw 19-17s-28e	5	542
Nash-Windfohr-Brown, Jackson 3-B, c n½ sw ne 24-17s-30e	456	3490

McKinley County—

Pet. Products Corp., Santa Fe 21, c n½ se nw 1-17n-9w	25	1570

San Juan County—

Goodrum & Vincent, Hare 1, sw ne 22-29n-11w	•	1025
Kutz Deep Test, Santa Fe 1, c nw nw 28-28n-10w	•	1650

United States Well Completions—*Continued*

Company, Well and Location	Init. Prod. Bbls.	Depth
Lea County (Vacuum)—		
N. G. Penrose et al, State-Warn (Ohio) 2, se sw sw 23-17s-35e	40	4580
Texas Co, State 4-AC, c se se 2-18s-34e	324	4710
Torrance County—		
O. J. Lee et al, Milburn 1, c se se 36-7n-7e	¶50	1860

New York

Allegany County—		
Messer Oil Co., Vosburg farm, Bolivar	7	1376
Vosburg farm, Bolivar	7	1380
R. B. Moore et al, Curtis farm, Bolivar	5	1352
N. V. V. Franchot, Murphy farm, Bolivar	5	1452
Prod. Oil Corp. "A" Keller-Scott farm, Wirt	10	1051
Brothers Oil Co., Crandall farm, Bolivar	5	1390
Messer Oil Co., Shaner farm, Bolivar	10	1452
Otsquago Corp., Pike farm, Alma	8	1429
Bradley Prod. Corp., Crandall farm, Alma	5	1063
Mack Oil Co., McDermott farm, Bolivar	6	1366
O. C. Underwood et al, McDivitt farm, Bolivar	5	1381
McEbenwood Oil Co., Pingery farm, Andover	8	1363
H. W. Patterson et al, Fuller farm, Amity	5	866
Bradley Pro. Corp., Coats farm, Wirt	7	1380
Tress Oil Co., Wilber farm, Bolivar	7	1389
Sloan & Zook, Ramsell farm, Bolivar	7	1419
Daggett Oil Co., Daggett Hollow farm, Genesee	5	1441
A. L. Shaner Oil Co., Condon farm, Clarksville	5	1288
Water Intake Wells—		
Ball Oil Co., Ball farm, Bolivar	..	1548
Bradley Prod. Corp., Nobles farm, Bolivar	..	1322
W. J. Richardson Est. No. 3, Gadsby farm, Bolivar	..	1527
Angie C. Tullar No. 10, Mix farm, Bolivar	..	1529
N. V. V. Franchot, Emerson farm, Scio	..	1152
C. H. Christman & Son, Middaugh farm, Scio	..	1390
Criss Oil Co., Vossler farm, Alma	..	1535
Otsquago Corp., Pike farm, Alma	..	1434
Marsh Oil Co., Fay farm, Bolivar	..	1433
Bradley Bros. Inc., Fitz-Carroll farm, Bolivar	..	1417
L. H. Thornton et al, Fassett farm, Willing	..	1142
H. W. Patterson et al, Browning-Norton farm, Scio	..	610
Browning farm, Scio	..	669
H. W. Patterson et al, Stebbins farm, Scio	..	681
Rico Oil Co., Alger farm, Scio	..	792

Ohio

Ashland County—		
Ray Stewart, Long 1	¶3.1	2764
Athens County—		
Crowley et al, Mansfield 2	¶0.05	1553
Coshocton County—		
Robinson, Hughes 3	¶0.8	3147
Knox County—		
H. E. Perkins, McMillen 3	•	2877
Knox Exploration, Gaines 1	100	2716
Rupham & Ridgway, Gaines 1	45	2709
Licking County—		
Robinson et al, Scanlon 1	•	733
Mossholder & Robinson, Scanlon 1	•	750
Armbruster & Stricker, Miller 1	•	700
Medina County—		
Thornton Producing Corp., Ross F9	5	437
Ross F10	5	464
Ross F15	5	434
Ross F16	5	442
Meigs County—		
C. W. Nuzum, Gilkey 1	1	228
Monroe County—		
Lucas Thornberry, Vess 1	¶0.05	1895
Harry & Russell Highman, English 15	1	1444
Noble County—		
Fassette Oil, Hayes 1	10	225
Perry County—		
B. C. Davis et al, Starkey et al	100	2740
Preston Oil, Cookson 6	214	3316
Kissling Drlg. Co., Klingerheirs 1	•	2860
Washington County—		
W. C. Patterson, Worstell 9	1	1442
Ridgeway & Patterson, Smith 1	¶0.03	1216
Turner & Partlow, Longfellow 29	½	381
Anderson et al, Liebrand 6	¶0.2	1606
Wayne County—		
Ohio Fuel, Armstrong 1	¶0.82	3134

Oklahoma

Caddo County—		
Texas Co., Smith 5, ne sw nw 2-5n-12w	2964	3490
Carter County—		
F. W. Elliott, Wolf 2, 165 ft w of sw ne se 22-2s-2w	15	1134
Creek County—		
Anderson Prichard, Woods 1, nw nw sw 18-15n-7e	•	4172
Shell Oil, Bishop 1, ne ne sw 12-15n-8e	¶6.5	3790
Deep Rock, Meador 1, se c nw ne 16-15n-7e	85	3984
M. L. Marrs, Drisler 1, sw ne sw 16-17n-8e	25	2438
Smith et al, Meyers 2, nw se ne 1-17n-10e	•	2425
Hughes County—		
Barnsdall, Skinner 1, se sw nw 11-9n-10e	•	3694
F. C. Schoner et al, Buck 1, nw nw se 20-9n-10e	•	288
Jefferson County—		
Long-Yingling-Locke, Seay 33, sw se sw ne 3-7s-5w	70	1274
Kiowa County—		
W. C. McBride, Watkins 1, nw ne nw 29-7n-17w (pb 1280)	•	1313
LeFlore County—		
Western Okla. Gas, Mills 1, c w½ sw se 28-9n-24e	¶2.0	5268
Lincoln County—		
Oklahoma Oil et al, Richie 1, nw se ne 32-15n-5e	•	3602
Portable Drlg., Teeter 1, nw se sw 24-17n-2e	120	4497
Logan County—		
Sunray et al, McLeod 2, se ne se 12-17n-2w	473	5135
McLain County—		
Patsy, Caldwell 4, se ne se 16-5n-3e	278	3679
Muskogee County—		
Rounsaville, Collins 1, 200 ft s of c e½ 17-13n-16e	•	2161
J. R. Parks, Hinderbrand 1, c s ½ s ½ ne 17-14n-19e	•	1143
Okfuskee County—		
Shell Oil, Lehmer B 1, se nw sw 26-11n-8e	286	3491
Tiger A 2, nw ne sw 35-11n-8e	262	3428
Oklahoma County—		
Phillips, Dunkma 1, sw nw ne nw 34-12n-3w	302	6554
Harper & Turner, Yeager 1, sw se ne 35-11n-8e	262	3428
Okmulgee County—		
Vincent, West 2, sw se ne 6-13n-11e	•	3329
J. E. Dow, Scott 1, se c nw nw 25-13n-14e	•	1341
Wicks, Barber 2, c sw sw 14-14n-12e	•	1819
Link Oil, Buchanan 10, c e 1 se sw nw 6-14n-14e (pb 1704)	Input	1717
Osage County—		
J. P. Walker 2, sw sw sw 13-25n-10e	23	1464
Magnolia Pet., 7, se nw nw 14-26n-6e	110	2925
Mitchell Notley, 13, apx ne sw se 35-27n-11e	3	1005
Pawnee County—		
Selby, Little 5, sw sw se 1-20n-7e	1.0	2423
Payne County—		
Halco Drlg. Co., Goble 1, se nw se 8-17n-1e	•	5278
Pontotoc County—		
Norville, Pyrnes 1, c sw nw 25-5n-6e (pb 1650)	•	2149
Pottawatomie County—		
Champlin, Billington 1, se se se 8-5n-5e	50	2470
Burton 1, sw se ne 9-5n-5e	150	2620
Sharp 1, ne nw nw 9-5n-5e	160	2503
Farmers Mutual, Walker 1, nw se se 9-5n-5e	145	2560
Atlantic Lee, 3, ne se se 16-9n-4e	198	4850
Sinclair-Prairie, Boyd 1, se nw se 21-9n-4e	25	4551
Tidewater, Perry 2, c nw nw 19-9n-5e	223	4081
Seminole County—		
G. J. Lynch, Ragland 1, c se nw 25-5n-5e	•	2610
Magnolia, Spillman 2, ne ne se 12-6n-7e	48	1218
Thompson, Anderson 2A, 75' n of sw se nw 22-9n-5e	183	3472
Margay, Long 2, nw nw se 7-11n-8e	250	3703
Stephens County—		
Skelly Oil, Frnesley 1, nw nw nw 36-1s-5w (pb 820)	25	860
Cities Service, Surba 20, ne c se sw 33-1s-8w	232	2348
Mudge Oil, Broadben 15, se nw nw 1-2s-5w	6	745
Magnolia, Dillard 5, ne nw ne 2-2s-5w	12	700
Dillard 33, nw se se nw 2-2s-5w	•	708
Tillman County—		
Jack Johnson, Longacre 2, sw ne se 32-2s-17w (pb 3000)	80	4507
Tulsa County—		
Midco Oil, Tiflean 2A, ne sw nw 9-21n-13e	•	1752

Pennsylvania

Allegheny County—		
Peoples Natural Gas, Wagner 1	¶0.01	3610
Armstrong County—		
Pittsburgh Plate, Hill 1	•	2004
Local Co., Holly 1	¶0.05	2885
Clarion County—		
Mill Creek Oil & Gas Co., Aaron 1	¶0.05	2207
Owens Illinois, Young 1	¶0.06	3250
Fayette County—		
Carl White, et al, Fee 1	¶0.05	2594
Washington County—		
Carnegie Natural, Taylor heirs 4	20	3070
Union Gasoline & Oil, Craft 5	¶0.36	1439
OLD WELLS DRILLED DEEPER		
Greene County—		
Mfgs. Light & Heat Co., Dinsmore 1	¶0.76	1884
Washington County—		
Equitable Gas, Barr 1	¶0.23	2922

West Texas

COMPLETIONS

Andrews County (Emma)—		
Sinclair Prairie, Cowden 13	1049	4250
Cochran County (Slaughter)—		
Anderson-Prichard Oil Corp., Woodley 9	916	4976
Honolulu Oil Corp., Igoe-Smith 12	617	5041
Igoe-Smith 20	1084	5045
Igoe-Smith 22	1543	5030
Igoe-Smith 23	884	5020
Magnolia, Mallet 6-A	1494	5030
Woodley 20	848	4994
T. P. Coal & Oil Co., Mallet	201	5045
Crane County (Sand Hills)—		
Humble, Tubb 65	•	4672
Crockett County (Soma-Noelke)—		
M. & M. Production Co., Bouscaren 1-F, 40 Mil. ft gas		1575
Crockett County (Crockett)—		
Gilcrease Oil Co., University 1-B-17	20	1661
O. R. Tipps, Tr., University 2	77	1456
University 5, sec 12	283	1445
Crockett County (Clara Couch)—		
Humble, Owens 1	109	2003
Dawson County (Wildcat)—		
Placid Oil Co., Higginbotham 1	•	4983
Ector County (Foster)—		
Cities Service, Johnson 5-A	282	4217
Geo. P. Livermore, Inc., Johnson-Ohio 1-45	972	4146
T. P. Coal & Oil Co., Johnson 8	308	4256
Fisher County (McCaulley)—		
Brown-Gardner-Higginbotham & Bell, Elvens 2	150	3290
Gaines County (Cedar Lake)—		
Stanolind, American Warehouse 11	729	4770
Gaines County (Seminole)—		
Amerada, Malone 1	236	5240
Riley 2-B	311	5295
Mabee O&G Co (was Yeager-Armstrong), Lindsay 1	531	5255
Gaines County (Wasson Deep)—		
Amon G. Carter, Wasson 4-D (pb to 7200) (new pay)	511	11108
Hockley County (Slaughter)—		
Falcon Co., Grant 1	559	4951
Magnolia, Mallet 15-D	1390	4988
Skelly Oil Co., Lincoln 5	1144	5000
Stanolind, Martin 4	230	4950
The Texas Co., Baker 2	2388	5044
Mallet 13-B	1248	5024
Mallet 14-B	1303	5020
Mallet 19-E	798	5020
Mallet 20-E	1904	5010
Slaughter 65	1424	5019
Slaughter 69	1926	5010
Slaughter 74	938	5010
Slaughter 76	2053	5020
Whittington Bros., Alewine 2	473	4955
Mitchell County (Northwest)—		
F. W. Merrick, Inc., Mills 2	199	1724
Mitchell County (Wildcat)—		
Westex Oil Co., Jones 1	•	3101
Pecos County (Lehn)—		
Burk Roy Co., Sullivan 6-C	168	1732
Samwan Oil Co., Boren-Humble 5	51	1725
Skelly Oil Co., Masterson 1-B (pb to 1698)	8	1740
Pecos County (Walker)—		
J. H. Lewis & Engle, White-Baker 1-C	35	2103
Ward County—		
Gulf, Hutchings 165	635	2777
Winkler County (Keystone)—		
J. R. Sharp et al, Crum 1-A	•	3575
Yoakum County (Wasson)—		
American Liberty Oil Co., Bennett-Texaco 2-B	130	5250
Humble, Randall 15	494	5098
OLD WELLS DEEPENED		
Crane County (Gulf-McElroy)—		
Gulf, McElroy 15 (otd 2896)	221	2957
Upton County (McCamey)—		
T. P. Coal & Oil Co., Lane 32-A (otd 2214)	144	2285

United States Well Completions—*Continued*

Southwest Texas

CORPUS CHRISTI DISTRICT

Company, Well and Location	Init. Prod. Bbls.	Depth
Bee County (W. Tuleta)—		
Dirks & Coquat, R. Harris 1	¶3 & 100	7620
Brooks County (Alta Mesa)—		
Standard of Texas, Mestina 22 tr 1	221	2560
Brooks County (Kelsey)—		
Magnolia, State-Marshall 14	500	4990
Calhoun County (Wildcat)—		
Rowan & Hope & C. McSpaden, Sitternberg 1	•	6105
Hidalgo County (Wildcat)—		
Baldridge & King, Mayer & Weill 1	•	4782
Jackson County (Francitas)—		
Francitas Gas Co., C. Vieta 1	•	7512
Jackson County (Ganado)—		
Texas Co., Mauritz et al 2-B	600	6686
Jackson County (Lolita)—		
Cox & Hamon, Mitchell 1	200	5958
Jackson County (N. LaWard)—		
H. M. Christie, Pickering 2	450	5223
Magnolia, Gordin 6	350	5225
Phillips, Johnson 2	500	5275
Jackson County (W. Ganado)—		
Pure, L. Kuretsch 2	500	4838
Jackson County (Wildcat)—		
Rowan Dr Co, J. H. McCullough 1	•	5791
Jim Wells County (Ben Bolt)—		
Graham Bros., J. P. Blake 1	425	4907
Jim Wells County (Wildcat)—		
Kilgore Dev., Inc., Weldon, Stacey & Blake 1	•	5825
Kleberg County (Stratton)—		
Humble, King-Paso Ancho 5	425	6620
Live Oak County (Oakville)—		
H. Coquat, Reagan 1	150	2763
Live Oak County (S. White Crk.)—		
H. Coquat, Everett 1	75	1837
Nueces County (Agua Dulce)—		
Stanolind, Weinert 5	•	8510
Richardson Pet. Co., Knight & Jackson 4	600	7070
Texon Royalty Co., Horne 6	750	7055
Nueces County (Banquette)—		
Osborn & Mid-Continent, E. Grove 1, new sd, outpost	¶50 & 500	7538
Nueces County (Minnie Bock)—		
E. A. Graham, Kampfhenkel 1-B	100	3815
Nueces County (Stratton)—		
Southern Minerals, Stratton Community 32	350	6725
Nueces County Wildcat)—		
G. E. Greer, A. H. Theiss 1	•	6610
Refugio County (Greta)—		
Monday Oil Co., J. F. B. Heard 1	300	4445
Refugio County (Refugio)—		
Sunray Oil Co., J. N. Mitchell 4	•	7795
San Patricio County (E. White Pt.)—		
Commercial Prod. Co., F. E. Hunter 1-B, outpost	•	6005
San Patricio County (Odem)—		
Seaboard Oil Corp., S. L. Lane 3	400	5330
N. R. Smith 2	550	5459
Wellington Oil Co. of Del., S. L. Lane 2	500	5455

SAN ANTONIO DISTRICT

Company, Well and Location	Init. Prod. Bbls.	Depth
Bastrop County (Lentz)—		
Furlong & Thompson, Lehman 1-A	27	2239
Bexar County (Gas Ridge)—		
Southwest Dr. Co., M. H. Covel 41	2	445
Bexar County (Wildcat)—		
G. P. Oakes, F. Applewhite 1	•	2500
Caldwell County (Bee Crk)—		
R. R. Ogden, J. W. Mieras 3-E	51	2301
Caldwell County (Tenney Crk.)—		
Elimag Oil Corp., S. M. Blackwell 1	•	2916
Milam County (Wildcat)—		
R. D. Kirkland, P. Graves 1	•	1210
Williamson County (Chapman-Abbott)—		
J. W. Armstrong, F. Abbott 1	5	1986
Zavala County (Wildcat)—		
Adams, Lyles & Norman, Matthews 1	•	4363

LAREDO DISTRICT

Company, Well and Location	Init. Prod. Bbls.	Depth
Duval County (E. Benavides)—		
Hiawatha O. & G. Co., G. Parr 3-A	¶20 & 250	5817
Duval County (Hoffman)—		
Cox & Hamon, de Cantu (Gonzales) 4	64	2707
Duval County (Kreis)—		
W. C. McBride, Inc., Fite 2, 2 mi s fld	•	3356
Duval County (Piedre Lambre)—		
Magnolia, DCRC 32 (203)	•	2156
Duval County (Wildcat)—		
Forest Dev. Corp., S. Benavides 1	•	3003
F. J. Gravis, J. M. Bennett 1	•	2870
Jim Hogg County (Colorado)—		
Humble, King-Colorado 47-B	650	2913
Jim Hogg County (Henne-Winch-Farris)—		
Jose Martinez, A. Martinez 1	•	1885
LaSalle County (Washburn)—		
Quintana Pet. Co., South Texas Dev. Synd. 5	1500	5559
McMullen County (Jacob)—		
F. C. Barry, C. T. Lark 6-C	11	985
Starr County (Rincon)—		
Continental, Slick 46-B	750	4245
Slick 1-D, outpost	250	4135
Starr County (Yturria)—		
Sun, Chapotal Land Co. 2-A	500	4242
Webb County (Killam)—		
O. W. Killam, Garcia-Villareal 22	65	2070
Zapata County (Escobas)—		
Dulup Oil Co., Gracia 11-C	•	650

Texas Panhandle

Company, Well and Location	Init. Prod. Bbls.	Depth
Gray County—		
Cities Service, Hughey 2-A	72	3198
Gardner Bros. et al, Barrett 8	330	3310
Kewanee Oil Co., Morse-Adams 9-A	36	2739
Oklahoma-State, Gethings 3-A	19	2848
Skelly, Schafer 141	340	3275
Taylor 6	109	3030
Stanolind, Lovett 5-A	431	3034
Texas Co., Davidson 7	236	3044
McLarty-Lester 8-A	96	2695
Continental, Finley 15-B	109	2966
Cree & Hoover, Davidson 1-B	320	3048
Dolomite Prod. Co., Johnson 2	•	3320
Johnson 3, sec. 88	•	3321
Phillips, Davidson 4	277	3076
Skelly, Lovett 6	723	3004
Schafer 139	402	3256
Schafer 140	271	3275
W. H. Taylor et al, Taylor 9	¶0.7	3125
Hutchinson County—		
Danube Oil Corp., Sanford 10-A	179	2709
Phillips, Timms 7	259	3170
Whittenburg 61	256	2800
Shell, Terry 2	165	3063
Sinclair Prairie, Weatherly 15	189	3120
Buffalo Oil Co., Cockrell 1	135	3125
J. E. Crosbie, Inc., Pitts 45	235	2865
Danube Oil Corp., Sanford 6-A	175	2823
Phillips, Lizzie 9	219	3260
Staples 7	273	3261
Staples 8	277	3214
Shell, Harvey Sisters 38-B	305	3080
Skelly, Watkins 11-A	375	2880
Stanolind, Jasper 3	108	3200
Moore County—		
Kerlyn Oil Co., McDowell 2	¶8.9	3295
Wheeler County—		
Pace & Ward, Patterson 2	192	2101
Portman & Jenkins, Patterson 3	130	2115

East Texas

Company, Well and Location	Init. Prod. Bbls.	Depth
Anderson County (Long Lage)—		
Tex Harvey Oil Co., Cartmel 8	95	5411
S. H. Killingsworth et al, Hull 2	¶115	5298
Henderson County (Opelika)—		
Lone Star & Shamrock O&G Co, Saylors 1	¶200	8414
Kilgore Area—		
J. W. Russell et al, Lacy 5-A	2000	3514
Longview Area—		
John Wrather and Robbins, Alexander 2	60	3585
Smith County (Wildcat)—		
B. F. Phillips et al, Fee (Gatlin) 1	•	5791
Wood County (Wildcat)—		
J. C. Moore et al, Green 1	•	5553
Wood County (Hawkins)—		
Humble, J. A. Brown 1-B (20-ac)	•	4908
L. A. Bryan 3-B (164¾-ac)	373	4907
Mayfield Co. 2 (35.35-ac)	273	4887
E. W. Moore 3-A (96.89-ac)	254	4862
W. S. Schamburger 1-C (30.7-ac)	369	4916
Stanolind, Miller 4 (118½-ac)	278	4877
Texas Co., Snider 2 (210.99-ac)	421	4847

North Texas

Company, Well and Location	Init. Prod. Bbls.	Depth
Archer County—		
Metzner & Alford, Portwood 1 (pb to 1380)	6	1505
Archer County (Scotland)—		
Shell, Coleman 4-G	856	5316
Clay County (Wildcat)—		
Continental, E. Spring 1	431	5630
Clay County (Antelope)—		
Shell, H. Henderson 19	105	3206
Mullens 4	306	3215
Clay County—		
Akin-Dimock-Costley, Saner 3-A	45	1121
Saner 4-A	•	1133
L. T. Burns et al, Hamilton 9	•	1358
F. H. Gohlke et al, Byers 1	18	1776
Johnson & Kouri, Taylor-Elliott 10	20	1140
Perkins & Cullum, Taylor 7-B	152	1076
Staley Oil Co., Hamilton 6	65	1130
Cooke County (Walnut Bend)—		
Sinclair Prairie, Ramsey 14	194	4845
Cooke County—		
C. B. Christie et al, Felderhoff 4	20	779
High Point Oil Co., Fette 8	11	1120
Trumter Pet. Co., Stacey 13-B	25	773
Denton County (Wildcat)—		
Hunt Oil Co., Jones 2	•	2446
Jack County—		
Elmore Oil Corp., Myers 1	392	2362
Panhandle Ref. Co., Shoun 2-A	768	3069
E. E. Reynolds et al, Henderson 3	•	364
Wichita County—		
Apple & Brandeberry, Jennings 7-B	11	1604
Geo. A. Goldsmith et al, Cooper 1	•	1350
J. W. Hastings et al, Ramming 1	18	1224
Petroleum Inv. Co., Doiglas 10-C	4	809
C. F. Schram et al, Duane 4	•	703
S. H. Walton et al, Coleman 25	9	402
Wichita County (K-M-A)—		
Shell & Phillips, Preston 19-A	444	4000
Wichita County (K-M-A Ellenberger)—		
Tide Water Associated, Ferguson 13-E	872	4353
Young County—		
Paul Atchley et al, Koester 1	•	1080
Kerlyn-Phillips, Stephens 1-A	•	350
McClure 1 (pb to 4075) new pay	624	4125
J. N. McGirl et al, Fisher 1-A	•	2650
Mudge Oil Co., Harrison 9	30	2752
Pemeta Oil Co., Benson 16	9	880
Sid Swink et al, Routon 1	•	719

OLD WELL DEEPENED

Company, Well and Location	Init. Prod. Bbls.	Depth
Jack County (Wildcat)—		
E. G. Christie et al (was Forbes), Davis 1 (otd 2518)	•	2960

GAS INPUT WELL

Company, Well and Location	Init. Prod. Bbls.	Depth
Wichita County—		
Underwood Oil Co., Ramming 1	•	1231

West Central Texas

Company, Well and Location	Init. Prod. Bbls.	Depth
Brown County—		
Cuthirth & Edington, Suttles 1	7	1164
C. L. Wann et al, Arledge 5	5	1287
Callahan County (Wildcat)—		
W. B. Schooler et al, Betcher 1	•	2004
Jones County—		
D. H. Bolin et al, Akard 1	•	2165
Condor Pet. Co., Sayles 36	134	1939
Harry Hines et al, Wimberly 3	468	2238
Shackelford County—		
Baker & Pardue, Morris 3	•	1651
Roeser-Pendleton-Humble, Morris 5	103	1583
Stephens County—		
A. W. Campbell et al, Pruett 1	†	3658
Taylor County—		
Dunigan Bros. et al, Hunter 3	20	2324
Tal-Vez Oil Co., Petree 1	¶1.8	2382

Texas Gulf Coast

Company, Well and Location	Init. Prod. Bbls.	Depth
Chambers County (Anahuac)—		
Humble, Johnston 41	•	7276
Chambers County (Barbers Hill)—		
Texas Gulf, Fitzgerald 4	389	5604
Fort Bend County (Blue Ridge)—		
G. J. Lee, Luscher 5	162	3777
Fort Bend County (Clodine)—		
Houston Oil, Thompson 3	79	7543
Jefferson County (Fannett)—		
Gulf, Bordages 13	184	8462
Jefferson County (Lovell's Lake)—		
Humble, Pitre 2	288	7791
Liberty County (Esperson)—		
General Crude, John Vajdek 1	125	9534
Liberty County (Martha)—		
Stanolind, Seaberg 8-A	53	8198
Polk County (Segno)—		
Humble, Kirby Lbr. 44-B	•	8404
Wharton County (Withers)—		
F. W. Michaux, Pierce Est. 43-A	158	5420
Texas Co., Pierce Est. 103-C	100	5384

West Virginia

Company, Well and Location	Init. Prod. Bbls.	Depth
Boone County—		
South Penn, Billups 3	•	2207
Braxton County—		
R. L. McCulty, Gerwig 5	¶0.49	1688
Calhoun County—		
Virginia Gasoline & Oil Co., Elliott 5	20	2092
Ayers & Carroll, Hardman 3	¶0.09	2046
McCall Drlg., Jacobs Realty Co.	10	1980
McCall Drilling, Smith 2	¶0.25	2160
F. A. Richards, Fling 1	¶0.25	1932
A. E. Weaver, McCune 1	13	2076
Clay County—		
Pitts. & West Virginia, Elk River Coal & Iron Co. 7795	¶0.06	2177
Virginia Gasoline & Oil Co., Brown, Swann & Goshorn 13072	8	1862
Pittsburgh & W. Va. Gas Co., Hall 7809	¶ 0.2	2310
Hall 7811	¶0.28	2298
Gilmer County—		
Clem S. Morris, Barnes 2	¶0.2	2100
H. B. Scott, Blank 1	¶0.35	1660
Carnegie Natural, Noeley 1561	¶0.24	1798
Wiant 1564	¶0.08	1718
Jackson County—		
Mullens Gas Co., Rogers 1	¶5.99	4959
United Fuel Gas Co., Shinn 5044	¶17.44	5099
Hope Natural Gas, Parsons 1	¶	5183
United Fuel Gas Co., Smith 5042	¶5.51	5171
Kanawha County—		
Peter Silman, Brown 31	5	2156
Columbian Carbon, Crawford 1	•	5046
Lewis County—		
Mud Lick Oil & Gas, Davison 6	¶0.05	2391
Logan County—		
Aldridge Gas, Justice 2	¶0.22	2511
Boone Gas Co., Fee 21	•	3190
Marion County—		
Hanley, Beatty & McIsaacs, Kennedy 1	•	3231
Marshall County—		
Manufacturers Lt. & Heat, Huff 3616	¶0.14	3294

WILDCAT REPORT
New Starts and Completions

CALIFORNIA

FIRST REPORTS

Kern County—H. C. Morton's No 2, 30-26-19, rig. Devils Den area, rig. F. H. R. Oil Co.'s No. 1, 2-28-28, Round Mountain area, rig.

ILLINOIS

FIRST REPORTS

Bond County—Chas. Moritz et al's Bone-White 1, ne sw ne 17-5n-4w, dr.

Clay County—Kingwood et al's Coggin 1, 291' e of nw sw nw/ 6-3n-7e, lcn.

Clinton County—Newton & Ward's Schaeffer 1, ne ne se 13-3n-3w, dr. J. R. Anderson et al's Seiffert 1, sw se sw 28-3n-2w, dr.

Coles County—Myers' Fudge 1, c e½ ne ne 20-12n-14w, dr.

Edwards County—Menefee's McDowell 2, nw sw ne 31-1n-11e, dr.

Franklin County—H. H. Wegener's McKemie 1, nw ne sw 30-6s-3e, dr.

Hamilton County—J. L. Youngblood et al's Thompson 1, w½ nw sw 29-4s-5e, dr.

Jasper County—F. Jablonski et al's Fischer 1, c e p sw sw 18-5n-14w, dr.

Jefferson County—C. O. O'Neal's Giordano 1, nw sw se 33-1s-1e, lcn. Magnolia's Riddle Bros. 1, ne se sw 8-3s-1e, dr.

Marion County—N. W. Whitten's Fyke 1, sw ne sw nw 32-2n-1e, dr.

Richland County—Walter Duncan's Bierhaus 1, e½ nw nw 16-2n-14w, dr.

Saline County—Seaboard Oil's Gilbraith 1, w½ nw sw 28-7s-5e, lcn.

Shelby County—Lakewood Oil Co.'s Hatten 1, ne ne ne 13-10n-2e, lcn.

Wabash County—Dean & Morton's Whiteside 1, ne sw ne nw 17-1n-11w, dr.

Washington County—James A. Brouk's Lamozyk 1, sw sw se 1-3s-2w, dr.

Wayne County—Karl Buerkle et al's Williams 1, w½ sw ne 30-1s-6e, dr. Sinclair-Wyoming's Goodard 1, e½ se ne 16-2s-5e, lcn.

White County—Cameron Oil Co.'s Reiling 1, sw se se 21-6s-10e, dr.

COMPLETIONS

Clay County—B. F. Williams' Nolan 1, s½ se nw 10-2n-7e, McClosky 3070-3083 ft., TD 3083 ft., flow 3608 bbls oil. Gulf's Hastings 1, sw se sw 12-4n-7e, abnd. 3066 ft.

Coles County—Olan Humphries' Fee 1, c ne 13-13n-10e, TD 945 ft. abnd. Carter Oil's Haybrook 1, c e½ se sw 2-13n-7e, A. V. 1826-1842 ft., TD 58 bbls. oil.

Edgar County—Raymond H. Pogue's Honnold 1, nw sw ne 14-12n-14w, abnd. 130 ft.

Hamilton County—Mid-Sun Oil Corp.'s Babler 1, s½ sw se 36-4s-5e, abnd. 3451 ft.

Jefferson County—Robinson-Puckett Inc.'s Holshouser Est. 1, sw sw nw 5-4s-4e, abnd. 3189 ft.

Company, Well and Location	Init. Prod. Bbls.	Depth
Putnam County—		
Dennis M. Roy, Paul 4	¶0.17	2390
Randolph Gas, Phelps 1	¶0.08	2462
Ritchie County—		
W. H. Bickel, Reaves 1	¶0.2	1970
Patterson & Pope, Patterson 11	•	1758
L. P. Bickel, Morris 5	½ & ¶0.1	1980
P. M. Lemon Oil & Gas, Scott 1¼	& ¶0.1	1601
Roane County—		
O. H. Reed et al, Hughes 2	15	1840
Upshur County—		
Cumberland & Allegheny, Elmer 316	¶0.77	2182
Pitts. & West Virginia Gas Co., Betts 7834	¶	4832
Allman 7833	¶0.2	4562
Wayne County—		
Owens, Libby, Owens, Booth 1	¶0.11	3346
Wetzel County—		
S. C. Brendel et al, Hohman 1	¶2.1	2907
Wood County—		
H. H. Uhl, Shafer 4	1½	631
Clifton Oil & Gas, Volcania Oil & Gas	10	1130
OLD WELLS DRILLED DEEPER		
Braxton County—		
Pittsburgh & W. Va. Gas Co., Howell 7367	¶0.14	1963
Salesbury & Bennett 1 (otd 1817)	¶0.17	2762
Lincoln County—		
Bridemore & Adkins, Ferrell 2 (otd 2585)	¶0.16	4105

Wyoming

Company, Well and Location	Init. Prod. Bbls.	Depth
Carbon County (Horn)—		
Glen Swartout Union Pacific 3, ne ne se 21-22n-78w	•	1034

St, Clair County—Ralph Hussong's Fee 1, ne sw nw 21-1s-6w, abnd. 690 ft.

Wabash County—Hilton Oil Co.'s Skelton 1, nw ne sw 36-1n-14w, abnd. 2964 ft.

INDIANA

FIRST REPORTS

Gibson County—Maner Graham et al's Thompson 1, c n½ sw sw 11-3s-12w, lcn. Bittler & McGinnis' Hayes 1, sw ne ne 20-1n-10w, dr.

Newton County—National Pet. Co.'s Bokma 1, ne ne nw 22-27n-8w, dr.

Pulaski County—Frank Lyon's 1, nw nw sw 24-29n-2w, lcn.

COMPLETIONS

Gibson County—Hall Edwards, Rec.'s Maier 50, c s½ sw 31-2s-13w, Cyp. 2478-99 ft. TD 2499 ft., 424 bbls. oil.

Posey County—Sells Petroleum's Hickam-Elliott 1, sw se se 14-5s-14w, abnd. 3084 ft., John Lindas et al's Pfeiffer 1, c sw nw sw 6-6s-12w. abnd. 1211 ft.

Pulaski County—Herman Erb's Albrecht 1, ne ne sw 9-29n-4w, abnd. 391 ft.

SOUTH LOUISIANA

FIRST REPORTS

Iberia Parish—Shell's Smith 1, Weeks Island prospect, 1500 ft w & 200 ft s of ne cor 18-14s-7e, lcn.

St. Landry Parish—Stanolind's R. Lee Mills, Lewisburg area, 3 mi e of Tweedel 1 (Acadia Parish), 14-7s-3e, lcn.

COMPLETIONS

Acadia Parish—Stanolind's Tweedel 1, Lewisburg field discovery, 136-ac tract ne Church Point, sec 77-7s-3e, td 10,300 ft, ran electrical log, perf 10,140-50 ft, flowed 211 barrels oil daily through ¼-in choke, tp 3500, cp 3400, gor 18,375-1, opens field.

Plaquemines Parish—Texas Co.'s Delacroix Island 2, 1 mi se Delacroix discovery, 3-16s-14e, td 10,552, ran electric log 10,377 ft, number of tests made, completed perfs 8955-70 ft for 335 barrels 37.6 gr oil daily through 3/16-in choke, tp 1600, opens first lower gravity production in new field.

NORTH LOUISIANA

FIRST REPORTS

Catahoula Parish—Atlantic Ref. Co., Catahoula Lake 1, c se nw 27-7n-4e, lcn.

Grant Parish—Placid Oil Co., Goodpine F-122, sw se 2-8n-2w, spd.

MICHIGAN

FIRST REPORTS

Allegan County—C. W. Cook's Mol 1, sw sw sw 30-2n-11w, dr.

Kent County—Jetter & De Kraft's Auble 1, se se ne 9-16n-10w, lcn.

COMPLETIONS

Clare County—H. J. Hirzel's Oxendale 1, se ne se 36-18n-5w, Dundee 3933 ft, td 3941 ft, 215 bbls oil, new field.

Isabella County—Rex Oil & Gas Co.'s Babcock 1, ne sw ne 18-13n-6w, Dundee 3510 ft, abnd 3591 ft.

Roscommon County—Sun Co.'s Bauman 1, c n sw ne 29-24n-1w, Dundee 2852 ft, Monroe 4133, pay 4179-4200 ft, sw 4209 ft, pb 4201 ft, acdd 500 gal., flow 70 bbls oil, new field.

NEW MEXICO

FIRST REPORT

Lea County—Prexy Wilson et al's Saunders 1, c se se 11-25s-35e, 6 mi w Jal pool, lcn.

COMPLETION

Donna Ana County—Al Parker et al's Simmons 1-X, swc se se 35-22s-5e, abnd 2270 ft.

OKLAHOMA

FIRST REPORTS

Creek County—L. S. Youngblood's Moore 1, nw ne sw 7-15n-9e, dr.

Kay County—Skelly Oil Co.'s Hardisty 1, c e½ sw se 4-28n-4e, lcn.

Lincoln County—Wilcox O&G Co.'s Layton 1, nw se nw 7-14n-6e, lcn.

Love County—Walter Neustadt's Wilkins 2, ne nw nw se 8-6s-2e, dr.

Marshall County—Colbert-Marshall's Burris 1, c se se 4-6s-6e, lcn.

Okfuskee County—John Droppleman et al's Dolly 1, 2-11n-7e, ne ne sw dr.

Seminole County—Mobud Oil Co.'s Replogle 1, ne ne nw 34-10n-8e, lcn.

COMPLETIONS

Creek County—Centroal Commercial Oil's Bruce 1, ne ne nw 33-17n-10e, broken sand 1997-2025 ft., sand 3025-30 ft., salt water 2255 ft., Bartles sand 2236 ft., TD 3039 ft., abnd.

Hughes County—H. G. Marshall et al's Hundley 1, c w½ sw se 27-5n-10e, McAlls. 2400 ft., TD 5201 ft., ran Jeep, showed possible oil or gas formation 5060-5130 ft., in Low. Gilc. sand, drilled out, hole full water, pb 5090 ft., abnd.

Jefferson County—T. N. McLaughlin et al's Coffer 1, c sw se sw 26-4s-9w, water sands 1675-98 ft., 2080-90 ft., 2239-62 ft., lime 2716-65 ft., and 3035-45 ft., Canyon lime 2715 ft., Arbuckle lime 2780 ft., cored 3045-51 ft., 5½ in. fine cry. dolo., TD 3110 ft., abnd.

Lincoln County—Wilcox O&G's Royer 2, nw sw ne 8-14n-6e, Prue 3228 ft. test Bartles. sand, show oil, TD 4110 ft., in shale, pb 3380 ft., abnd.

McIntosh County—Phillips Pet.'s, McVey 1, c w½ se ne 1-10n-13e, salt sand 997 ft., McAlis. 1495 ft., Warner 1605 ft., Hawthorne 1759 ft., Atoka lm. 2129 ft., Gilc.¶ zone 2190-2505 ft., Wapa. 2750 ft., Union Valley 2905 ft., Cromwell 3041-3140 ft., Fayetteville 3148 ft., Mayes 3470 ft., Wood. 3587 ft., Misener & Hunton 3621 ft., Sylv. 3652 ft., Viola 3715 ft., Dense 3745 ft., Dolo. 3755 ft., 1st Wilcox 3756 ft., TD 3830 ft., no show oil, abnd.

Noble County—Carter Oil Co.'s School Land 1, ne ne sw 13-21n-2e, Layton 3180-3220 ft., oil stain 3200-10 ft., Ccb. 3398-3415 ft., Osw. 3550-3730 ft., Ccb. 3730 ft., Prue sand 3774-90 ft., Ref Fork sand 3905-10 ft., Pink ls. 3910-25 ft., Cherokee 3925-4023 ft., Bartles. absent, Miss. 4140 ft., Chatt. 4317 ft., Misener 4348 ft., Viola 4365 ft., Simpson Dense 4368 ft., Dolo. 4382 ft., 1st Wilcox 4408-22 ft., Cored 4401-11 ft., dolo, 1st. and sand, 2nd Wilcox 4434 ft., cored 4447-48½ ft., 14 in. hard wet salty sand, cored 4467½-70 ft., 26 in. white hard salty sand, reamed and drld. 4471 ft., TD, abnd.

Stephens County—Glen Grimes et al's Baker 3, ne c se nw 35-2s-6w, oil sand 1851-55 ft., drilled out, some oil and 1 bbls. water per hr., collapsed bottom pipe, swedged out, tested 45 bbls. day first 24 hrs., 50 percent cut water, water sand 1850-80 ft., Arbuckle lime 1900 ft., TD 1905 ft., abnd. Carey-Norbury's Kern 1, c se nw se 30-3s-1w, rotary tools, base Pont. 3049 ft., Hoxbar 3064 ft., TD 3516 ft., sandy shale, abnd.

WEST CENTRAL TEXAS

FIRST REPORTS

Callahan County—Homer Beasley et al's Hatchett 1, sw nw nw D&DA sec 22, lcn 4000-ft test.

Hood County—Aztec Oil Co.'s Reese 1, west central part Wm. R. Prewitt sur Pat. No. 1.989, lcn 2600-ft test.

Palo Pinto County—W. K. Gordon et al's Conway 2, 270 ft from n and 1000 ft from e lines D. Mitchell sur A-1647, lcn 4000-ft test.

San Saba County—John J. Mitchell et al's Jones 1, 500 ft out NWc of Nic Moxel sur No. 66, 6 mi e Mercury, elev 1414 ft, lcn.

Taylor County—C. W. & W. L. Snoddy et al's Tipton 1, SEc w½ n 400-ac tr, T&P sec 20, blk 18, 3 mi nw Merkel, sp.

COMPLETIONS

Brown County—D. H. Brock et al's Adams 1, SWc Lot 17, Chas. Messer sur A-127, abnd 1078 ft.

Callahan County—C. B. Holmes et al's Gray 1, NEc w½ DD&A sec 40, abnd 469 ft. W. B. Schooler et al's Betcher 1, nwc S. P. Ry., sec7, blk 6, abnd 2004 ft.

Eastland County—J. C. Miles-W. R. Francisco's Mitcham 1, SWc TE&L sec 3175, abnd 644 ft.

Stephens County—Tom G. Shaw, Tr.'s Whalen 1, NWc TE&L sec 1088, new pool, elev 1111 ft, top Bend 3485 ft, Marble Falls 3875 ft, Mississippian 4636 ft, Ellenberger 4689-4707 ft, pb 4100 ft, initial 10,450,000 ft wet gas natural, sandy-lime 4077-95 ft.

EAST TEXAS

FIRST REPORTS

Falls County—C. G. Warren et al's Dyer 1, 2610 ft from ne and 5050 ft from se lines Geo. Green sur, 3 mi nw Crawford, sd 800 ft.

Rusk County—O. W. Killam et al's Bessie M. Richardson 1, nwc of 60-ac lse and 240-ac tr, J. I. Sanchez sur, 2½ mi n New Salem, cem cas 217 ft.

COMPLETIONS

Smith County—B. F. Phillips et al's Fee (Gatlin) 1, nwc 55-ac tr, Oscar Hawkins sur, elev 388 ft. Pecan 2722-3116 ft, Austin 3585-3770 ft, Woodbine 3801 ft, Georgetown 4133 ft, base Goodland 5364 ft, Paluxy porosity 5548 ft, 1st Glen Rose 5742 ft, abnd 5791 ft.

Wood County—J. C. Moore et al's Green 1, 5402 ft from s and 1313 ft from e lines 1340-ac tr, J. M. Caudle sur, elev 492 ft. Nacatoch 2408 ft, top Pecan 3545 ft, Gober 4336-4503 ft, Austin 5345 ft, abnd in chalk 5553 ft.

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NORTH TEXAS

FIRST REPORTS

Archer County—Sinclair Prairie's Coleman 1, swc blk 6, Coleman subdiv of Brazos CSL sur A-18, 5 mi n Scotland, lcn 6000-ft test.

Clay County—Webb-Taylor Oil Co.'s Ryan 1, ne nw blk 11, Byers subdiv, sp.

Cooke County—S. W. Sims et al's Dayton 1, sec of w-40 ac of 246-ac tr in se part Francis Godley sur, A-293, lcn.

COMPLETIONS

Clay County—Continental's Spring 1, 200 ft from n and 1254 ft from w lines H&TC 24, blk 4, new pool 3 mi nw Ringgold pool, top Bend 5582 ft, conglomerate 5587-5630 ft, 431 bbls natural 28/64-in, 48-gravity oil.

Denton County—Hunt Oil Co.'s Jones 2, 4600 ft from n and 3500 ft from e lines J. Thomas sur A-1239, abnd 2446 ft.

Young County—Kerlyn Oil Co.-Phillips McClure 1, 1701 ft from w and 425 ft from s lines TE&L sec 1952, new pay Kerlyn-Loving pool, top Bend 4010 ft, pay 4049-59 ft, pb from 4125 ft to 4075 ft, used 5000 gals acid, initial 104 bbls 4 hrs ½-in.

SOUTHWEST TEXAS

FIRST REPORTS

Bastrop County—Marts & Beaven Oil Co.'s Elgin Brk Co. 1-A, 205-ac lse, Wm. Goodwin sur, 5 mi se Elgin, dr 2150 ft 3500-ft const. Marts & Beaven's Wamel 1, 194.5-ac lse, J. Billingsly sur, 3 mi sw Cedar Crk, lcn 1800-ft test. Rea & Lourito's Kirksey 3, 45-ac lse, G. J. Glasscock sur, 3 mi se Elgin, lcn 2900-ft test.

Bee County—W. R. Quin's Scott 1, 754-ac lse, N. Recendes sur, 3 mi n Beeville, lcn 5000-ft test.

Bexar County—O. O. Luter's Fee 1 Mount Vernon addn, s S. A., lcn 1000-ft test.

Brooks County—Sun's Cage 2, M. Garcia sur 704, on 43, 219-ac lse, 11 mi sw Falfurrias, dk 6500-ft test.

Duval County—101 Oil Co.'s M. S. de Martinez 1, Falcon Gr, 3 mi se Santa Cruz, lcn 3800-ft test. A. L. Slaughter et al's Dee, McFall & Hunter 1, J. Poitevent sur 515, on 240-ac lse, 2 mi nw Kreis fld, Magnolia farmout, sp 3400-ft test.

Guadalupe County—J. A. Forrester's Maierhofer 1, 405-ac lse, L. H. Peters sur, 2300-ft test to start immediately.

Jackson County—Sun's B. Hasdorff 1, blk 4, Westhoff sub, T. Menefee sur, 3½ mi se Edna, lcn 6500-ft test.

Jim Wells County—Wesley Davis et al's P. Seidel et al 1, blk 5, DS&G sub, Casa Blanca gr, 4 mi e Orange Grove, lcn 6000-ft test. H. J. Mosser's Fee 1, 1747-ac tr, G. J. Reynolds sur 108, 3½ mi nw Alfred, sp 6000-ft test. Plymouth Oil Co.'s J. J. Kuck 1, n cor blk 6, GCF & TL sub, 2 mi se Orange Grove, lcn 6000-ft test.

Live Oak County—Yegua Oil Co.'s J. Watson & J. Shipp 1, Pablo Salinas sur 11, ½ mi ne abnd Ft. Merrill fld, lcn 5500-ft test.

San Patricio County—Texas Co.'s Ingall et al 1, blk 1, sec 11, Taft sub, 5 mi ne Taft, lcn 6500-ft test.

Starr County—R. E. McClung et al's Simmons 1, sur 74, on 1768-ac lse, 2 mi w .N. Rincon fld, sp 5000-ft test.

Uvalde County—D. T. Clement's Donaghes 1, N. de la Zerda sur 412, on 1938-ac tr, 6 mi se Sabinal, lcn.

Webb County—Regent Corp.'s La Mesa Lnd & Cattle Co. 1, sec 5, Tumlinson sur, 22 mi nw Laredo, 6500-ft test to Midway.

Williamson County—H. G. Albert's Stromberg 1, P. Coursey sur, 3 mi se Taylor, lcn 900-ft test. W. O. Caffey's Folker Ebin et al 1, W. Cartwright sur, 3 mi sw Thorndale, lcn 1500-ft test.

Zapata County—Forest Dev Corp.'s S. J. de Ramirez 2, blk 8, sh 5, H&GN sur 7, 7 mi s Randado, lcn 2600-ft test.

COMPLETIONS

Bexar County—G. P. Oakes' F. Applewhite 1, B. Martinez sur 36, 16 mi s S.A., abnd 2500 ft.

Calhoun County—C. McSpadden & Rowan & Hope's Stiernberg 1, blk 164, Alámo Beach sub, Cavazos sur, 3 mi s Port Lavaca, abnd 6105 ft.

Duval County—Forest Dev. Corp.'s S. Benavides 1, 691, 4 mi ne Bruni, abnd 3003 ft. F. J. Gravis' J. M. Bennett 1, sec 433, 10 mi e Bruni, abnd 2870 ft. W. C. McBride, Inc.'s T. B. Fite 2, BS&F 87, 2 mi sw Kreis fld, abnd 3356 ft.

Hidalgo County—Baldridge & King's Mayer & Weill 1, sh 1, Por 47, 9 mi w Mission, abnd 4782 ft.

Jackson County—Rowan Dr. Co.'s J. H. McCollough 1, A. B. Williams sur, 5 mi ne Cordele fld, abnd 5791 ft.

Jim Wells County—Kilgore Dev., Inc.'s Weldon, Stacey & Blake 1, blk 7, DS&G sub, 2 mi ne Henshaw fld, abnd 5826 ft.

Milam County—R. D. Kirkland's P. Graves 1, S. C. Robertson sur, 2½ mi w Sharp, abnd 1211 ft.

Nueces County—G. E. Greer's A. H. Triess 1, blk 10, Bishop sub, 8 mi se Driscoll, abnd 6610 ft. Osborn & Mid-Continent's Grove 1, tr 68, Pauls sub, Herrera gr, 1½ mi ne Banquette, td 7538 ft, perf 6978-83 ft w/12 f g & d, 2400 lbs SIP, est 50,000 gas open, BHP 3100 lbs open, 3500 lbs closed. Gr 56. Opens new sand at Banquette.

Zavala County—Adams, Lyles & Norman's C. D. Matthews 1, Sec 4, I&GN sur, 4½ mi nw LaPryor, abnd 4363 ft. top Edwards lime 4246 ft.

TEXAS GULF COAST

FIRST REPORTS

Harris County—J. L. Davidson's W. S. Swilley 1, Sheldon area, 5572 ft. e of wl & 3250 ft. n of sl Victor Blanco sur, abstract 2, shallow test, lcn.

Pure Oil's Mike Albanese 1, 2.7 mi ne Alief western part county, 399 ft from e & w lines and 466 ft from north line 100-ac tract Christian Williams sur, lcn.

Jefferson County—Stanolind's W. S. Davidson 1, Big Hill dome flank, 3850 ft n of sl & 467 ft e of wl of 160-ac tract, T.N.O. sur, sec. 173, pd 9500 ft, lcn.

Wharton County—Sinclair Prairie's Matilda Kuebla 1, 8 mi s El Campo, 467 ft n & w of se cor nw¼ sec 79, E.T.R.R. sur, abstract 153, pd 7600 ft, lcn.

COMPLETIONS

Jefferson County—W. P. Luse's Lemora Kemp 1, Fannett area, 467 ft from nl & 467 ft from el of 110-ac tract, salt water sand 8066 ft, td 8615 ft, abnd.

WEST TEXAS

FIRST REPORTS

Andrews County — Forest Development Corp.'s University 1, c nw nw sec 21, blk 9, mim.

Cochran County—J. T. O'Neal Drl. Co.'s D. S. Wright 1, center lab 14, leag 61, Martin SCL, 4 mi sw Whiteface, mim.

Ward County—Dom C. DeVito et al's University 1, sec sw sec 19, blk 16, lcn.

COMPLETIONS

Dawson County—Placid Oil Co.'s Higginbotham 1, nwc lab 13, league 269, Moore CSL, elev 2963 ft, abnd 4983 ft.

Mitchell County—Westex Oil Co.'s Jones 1, near c nw ne T&P sec 22, blk 29, T-1-N, elev 2225 ft, top lime 1800 ft, abnd 3101 ft.

UTAH

FIRST REPORT

Sanpete County—Ben H. Bullock et al Govt. 1, se se sw 24-20s-1w, Redmond anticline, sp 50 ft.

WYOMING

FIRST REPORT

Sublette County — Wyoming Pet. Corp.'s Govt. 1, nw ne nw 3-29n-113w, Big Piney, dr 200 ft, 12½-in csg 87 ft.

New Drilling Company Organized at Houston

The Grey Wolf Drilling Company has been incorporated to take over the drilling operations of Long & Wolfe and Gray & Wolfe. The company will operate steam and diesel rigs in the Gulf Coast region. Headquarters will be at 815 Second National Bank Building, Houston.

Officers are R. J. Wolfe, president; William D. Gray, vice president; John A. Chapman, vice president, and Kenneth Jack, secretary and treasurer.

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MEN IN THE INDUSTRY'S NEWS

GLENN P. THOMPSON has been appointed chief production and development analyst in District No. 3 Office of Petroleum Coordinator, Houston. Thompson has been employed by the Texas Railroad Commission for the past seven years as chief supervising accountant in the oil and gas division. Born July 28, 1904, at Quincy, Illinois, he was educated in the local schools, including business college, and at the University of Illinois. After leaving college he went to work for the Georgia Railway and Power Company and a few years later he was employed by the Texas Petroleum Council.

W. L. WOODWARD of Zenith Gas System, Inc., Alva, Oklahoma, was elected president of Oklahoma Utilities Association for 1942 at a recent meeting at Tulsa. J. C. Happenny, Oklahoma Power & Water Company, Sand Springs, was elected first vice president; E. C. Jullian, Consolidated Gas Utilities Corporation, Oklahoma City, second vice president; B. M. Lester, Oklahoma Gas & Electric Company, Oklahoma City, treasurer; Miss Kate Niblack, Oklahoma Utilities Association, Oklahoma City, secretary. The annual convention of the association is set for March 23-24, 1942, at Oklahoma City.

JOHN FULLER, Oil Well Supply Company, has been chosen president of the Dallas Petroleum Engineers Club, succeeding H. C. Otis, president of Otis Pressure Control, Inc. Other officers are: Horace Sanders, Cooper-Bessemer Corporation, executive vice president; W. W. Scott, The Atlantic Refining Company, and R. E. Landis, National Supply Company, vice president, and Ed Peters, Frank & Fred Jones Drilling Company, secretary-treasurer.

W. J. INGHAM, geologist of Tulsa, is conducting subsurface geology work for Gulf Refining Company at Indianapolis, Indiana.

R. STEINHORST has been made assistant to the division engineer of The Texas Company at Tulsa. He has been district engineer for the company at Wichita, Kansas. W. G. Auer of The Texas Company of Great Bend, Kansas, was transferred to Wichita and will take the place of Steinhorst.

L. G. MORGAN is an addition to Cities Service Oil Company's geological staff at Mattoon, Illinois, having been transferred there from Wichita, Kansas.

W. K. WHITEFORD, vice president, British American Oil Producing Company, was guest of honor recently at a party at the Tulsa Club in recognition of his transfer to Toronto, Canada, as liaison man to the directorate of British American Company, Ltd.

A. S. RHEA of Sun Oil Company, Kilgore, last week was elected 1942 chairman of the East Texas Section of the American Institute of Mining and Metallurgical Engineers. Vice chairmen are M. L. Mayfield, Operators Committee, Cotton Valley, Louisiana, and C. B. Carpenter, United States Bureau of Mines, Dallas. Curtis F. Maxwell, Humble Oil & Refining Company, Overton, was elected secretary-treasurer. Directors, elected for two-year terms, are E. H. Blum, The Atlantic Refining Company, Dallas; W. S. Morris, Kilgore; E. L. Rawlins, Union Producing Company, Shreveport.

HAROLD GRAY, London representative for Reed Roller Bit Company, has accepted a commission as Lieutenant in the British army. He will perform special duties overseas.

W. J. CALNAN, H. D. Tietz, and E. A. Turner have been appointed assistants to J. F. McNamara, Monel sales manager of The International Nickel Company. H. E. Searle, formerly an assistant to McNamara as manager of engineering sales for the Monel department, has been transferred to nickel sales department under R. L. Suhl, sales manager. C. J. Bianowicz has been named head of the chemical section of Monel sales.

GEORGE A. DUNCAN, for the past eight years assistant branch manager for the Waukesha Motor Company, Tulsa, has been advanced to manager, succeeding Arch F. Campbell, resigned.

Duncan entered the oil industry more than 15 years ago with the Barnsdall Oil Company in Tulsa. Later he entered the machinery business with C. F. Camp Company of Tulsa, distributors for Waukesha Motor Company, established a direct company branch in 1933 and Duncan joined Campbell's staff as assistant branch manager in September of that year.

HAROLD L. THOMAS, publisher of a Nebraska oil report, spoke recently before the Omaha Chamber of Commerce oil development committee on recent oil activity in Nebraska.

JENE HARPER has announced the incorporation of Franklin Supply Company and the subsequent purchase of assets of the former Franklin Tool Company by the new corporation with general offices at Mt. Vernon, Illinois.

RALPH J. LUNDRIGAN has joined Cochrans Corporation, Philadelphia, to supervise the merchandising of the new Cochrane-Becker high pressure condensate return system.

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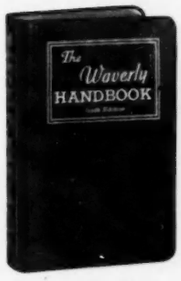

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Squeaks from the Bull Wheel

Corrected Bill

They did not get to the hospital quick enough and the baby was born on the lawn in front of the hospital.

The itemized bill was finally received and the careful husband objected strenuously to one item—"Delivery room, $25.00."

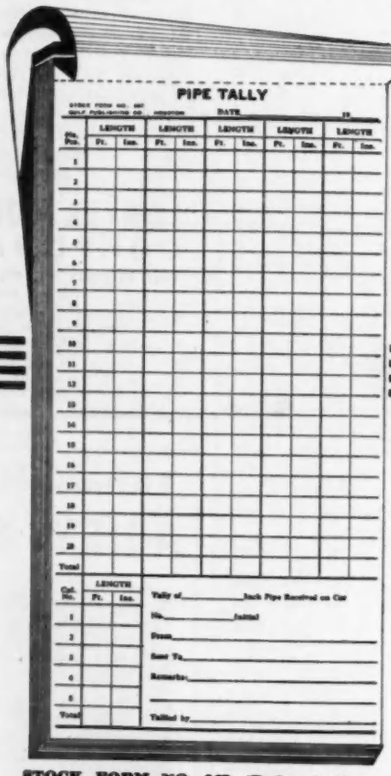
He returned the bill for revision. In due time it was returned with the objectionable item revised to read: "Greens Fee—$25.00."

Revenge

First Little Bird: "Who's that sitting on the bench?"

Second Little Bird: "Oh, that's the guy who shot at us the other day."

Third Little Bird: "Well, what are we waiting for?"



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Complete stock of these forms are available in: CORPUS CHRISTI from Jack Bonner Company. LONGVIEW from Topp Printing and Stationery Company. MIDLAND from West Texas Office Supply Co. SAN ANTONIO from Paul Anderson Company.

We have published a completely illustrated catalog of these forms. If you have not received your copy we will send you one upon request.

GULF PUBLISHING COMPANY

3301 Buffalo Drive **Houston, Texas**

The Answer

Have you had much experience with sailors?

Yes, gobs and gobs.

Habit

"I feel like I'd like to punch that sergeant in the nose again."

"Again?"

"Yes, I felt like it yesterday."

Home Training

"Where does God live?" asked the teacher.

"I think he lives in our bathroom."

"Why do you think that?"

"Well, every morning Daddy goes to the bathroom door and yells, 'God! Are you still in there?' "

Too Quick

"I'm afraid you have what is called 'clergyman's sore throat.' "

"The hell you say!"

"Of course, I may be wrong. The examination was not thorough. I will look again."

Must Have Been

John: "Was the Thomas Christmas party a success?"

Jake: "Was it? I wore home a holly wreath and they've had my hat hanging in their window for three days."

Needs Help

"And is your wife still as pretty as she used to be?"

"Oh, yes, but it takes her much longer."

Got Results

"Where's old Four-Fingered Pete?" asked Alkali Ike. "I ain't seen him around here since I got back."

"Pete?" said the bartender. "Oh, he went up to Hyena Tongue and got jagged. Went up to a hotel winder stuck his head in and hollered, 'Fire!' and everybody did.

Breaking Sales Resistance

She was working extra, and extremely anxious to make a good sales record. Thus, when a customer examined a dictionary priced at $35, she utilized every argument at her command. The quality of the paper was extolled, and the binding was mentioned in solemn tones. Finally it was time to apply the clincher. "And another thing you will notice," the saleswoman cooed, "is that this dictionary is arranged alphabetically."

For Midnight Oil

Librarian: "It's time for closing, sir. Is there anything you'd like to take out?"

Student: "Yes, there is. How about the blonde in the blue dress?"

Office Boy's Lament

Just as the office boy had decided to satisfy a lifelong ambition to own a fancy fur coat, the price of furs were jacked up out of sight and new luxury taxes slapped on. He felt so cut up about it that he just had to burst into verse—thus:

The polar bear again we note
With jealousy intense,
He's born with a fur overcoat
Which saves him much expense.

He: "Where can I get hold of you?"

She: "I don't know, I'm awful ticklish."

WRECKED BY RUST!

STOP IT *with*

RUST-BAN

REG. U. S. PAT. OFF.

The most complete line of rust preventives on the market.

RUST, the great wrecker of metal machinery and equipment must be stopped. In these times when material resources of all kinds must be conserved, not one ounce of precious iron or steel may be sacrificed. Rust-Ban protects against rust. In the Rust-Ban line will be found products for practically every service condition. For the Rust-Ban solution to your rust problems write your nearest Rust-Ban marketer.

RUST-BAN is sold: In New York and New England by Colonial Beacon Oil Co., New York City • In Pennsylvania by Standard Oil Co., of Pennsylvania, Philadelphia, Pa. • In New Jersey, Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina and South Carolina by Standard Oil Company of New Jersey, New York City • In Arkansas, Louisiana, Tennessee by Standard Oil Company of Louisiana, New Orleans, La. • In Texas by Humble Oil & Refining Company, Houston, Texas • In Oklahoma and Kansas and parts of Missouri by The Carter Oil Company, Tulsa, Oklahoma • In Kentucky, Georgia, Florida, Alabama and Mississippi by Standard Oil Company (Ky.), Louisville, Kentucky • In other states by Penola Inc., Pittsburgh, Pa. • In Canada by Imperial Oil Ltd., Toronto, Canada.

NOTES FOR THE Equipment Buyer and User

Shop Truck
THE BUDA COMPANY

The Buda Company, Harvey, Illinois, has announced development of a new ½-ton industrial shop truck known as "Buda Chore Boy."

This new industrial shop truck weighs 800 pounds, is driven by a powerful, low maintenance, 4 cycle, air cooled, 7.7 horsepower engine. Chore Boy is provided with a heavy duty friction drive with both forward and reverse speeds and neutral position for idling.

The load capacity is 1000 pounds and has a loading space of 12.8 square feet. The frame is of electrically welded steel, with anti-skid steel deck and a heavy gauge sheet metal engine housing.

Brake is of the internal expanding type on an intermediate shaft and is applied by standard brake pedal. Brake is automatically applied the instant the operator leaves the seat. The Chore Boy will not operate when driver is off seat. It will hold fully loaded on an incline or ramp.

Oilwell Bulletin

Oil Well Supply Company, Dallas, Texas, has issued three bulletins describing new "Oilwell" products: No. 5 pumping jack, No. 101 swivel, and TC-12C and TC-17L twin-v crank pumping units.

Black-out Paint
AMERICAN-MARIETTA COMPANY

American-Marietta Company, 43 East Ohio Street, Chicago, Illinois, has announced a black-out paint for darkening windows and skylights of industrial and commercial properties where it would be impractical to extinguish lights at the sound of raid warnings.

The paint had been undergoing development in the company's laboratories for several months. Final tests were speeded up with the Japanese attack and commercial production started 10 days later.

The paint is being marketed in paste form, and, when cut 50 percent with water, can be sprayed or brushed on windows to prevent all passage of light. Coverage is 800 square feet to the gallon. It dries within 40 minutes, providing a flat surface that will not flash back or glare when hit by artificial light used within the room. In interior applications, a single coat may be covered with a white paint where large glass surfaces make the reflection properties of a white surface necessary.

A-1 Bit Opens Illinois Branch

A-1 Bit and Tool Company, Houston, service operators of milling tools, has opened a branch office in Illinois. Earl Robishaw has been appointed district manager, with headquarters at Olney.

Welding Procedures

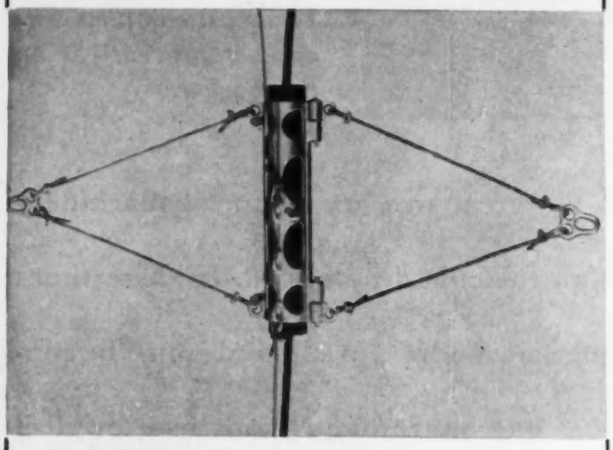
Air Reduction, 60 East 42nd Street, New York City, has issued a 55-page book, "Welding Procedures," clarifying the proper welding process for a particular metal under various circumstances.

Strong, fast economical welds can be made only by a welder who has a complete knowledge of the factors involved in welding the particular metal he is joining. "Welding Procedures" gives the reader the full benefit of Air Reduction's long experience in oxyacetylene and electric arc welding, brazing, etc.

The book recommends the best filler metals to be used for each process, and describes specialized welding techniques not commonly known. In an appendix, data are given for the calculation of electrode and gas welding rod consumption for different types of welds; also comparative welding record sheets for tabulating data that will determine the best welding method for a particular job.

Metals are grouped under such headings

PATTERSON-BALLAGH WIRE LINE GUIDES



Reduce Line Wear and Kinking

Most drilling contractors and oil companies have adopted Patterson-Ballagh Wire Line Guides as Standard because they have proved their efficiency in stabilizing the line, eliminating excessive fatigue, insuring proper spooling and thus reducing strand wear, looping and kinking. Automatic lubrication further lengthens line life. Fire hazard is removed as there is no metal-to-metal contact. There are no rotating parts to throw grease, no loose falling particles.

Made in three styles: 2-section for short or "work-over" jobs; 4-section for most wells; and 6-section for high derricks and deepest wells. Rubber guide gives long wear and is easily replaceable when worn. Shipped complete ready for installation.

See Composite Catalog

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GAS-LIFT PRINCIPLES AND PRACTICES

By S. F. SHAW, E.M.
Consulting Engineer

THIS BOOK is largely based on a series of lectures on gas lift delivered before the Petroleum Engineering Department of the Agricultural and Mechanical College of Texas on November 9th and 10th, 1939, by the author as special lecturer of the Department of Petroleum Engineering.

A history of the development of the air-gas lift is given, covering operations in air and gas-lift, and noting some of the inventions that have been patented in connection with this work.

The performance data in the numerous tables are selected from some 15,000 actual field tests made to determine the best rates at which to produce a well, these tests being made by the author or under his supervision, in many fields of the United States and foreign countries.

The principles controlling operation of the gas-lift are discussed, curves and formulas are given for determining the quantity of gas required to lift liquids, and curves and formulas are given for determining the capacity of various sizes of pipes in certain fields, and methods are discussed for determining similar formulas and curves in new oil fields.

A lengthy discussion of the selection of compressors and building of plants suitable for handling gas-lift operations is given.

CONTENTS:

History and Invention; General Principles Controlling Gas-Lift Operations; Lifting Efficiency; Lift and Submergence; Pressure; The Eductor; Straight or Continuous Gas-Lift; Combination Gas-Lift Flow; Intermittent Gas-Lift Flow; Compressor Plant Installations; Gas-Lift Practices in Various Fields.

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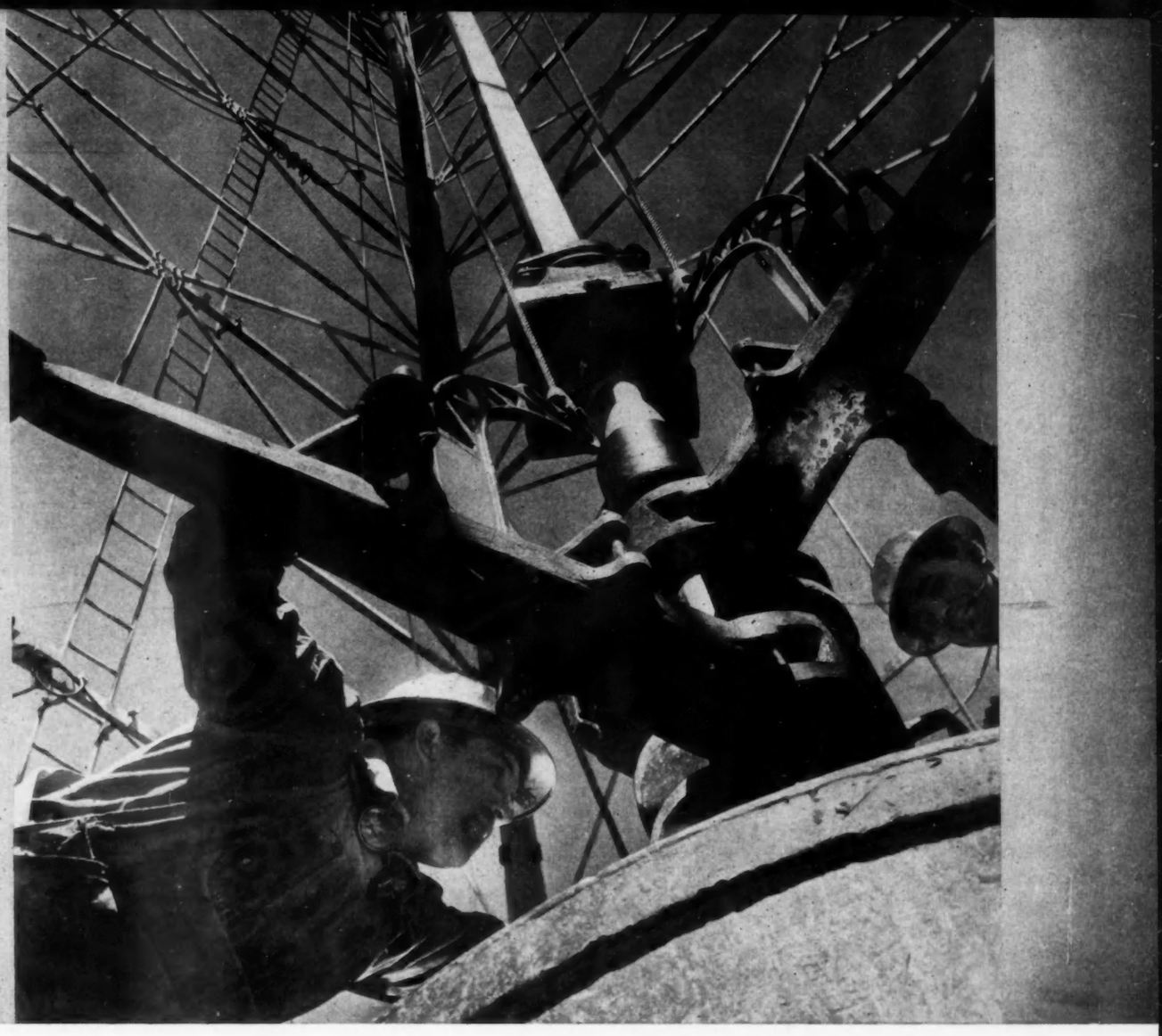

A LOT DEPENDS ON WHAT THEY'RE MADE OF

Tongs can be one of two things on a rig — either an aid to drilling efficiency, or a menace to everyone on the floor, depending largely on the material from which they are made.

Cast Manganese-Molybdenum steel is proving an excellent material for heavy duty tongs.

In tong shafts, this steel can be heat treated to strength and toughness that permit reduced weight and a high factor of safety.

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The successful milling up of a "fish" is one thing. Cleaning the hole of millings is another . . . but the job is not complete until the millings are out. The Cavins Automatic Hydraulic Suction Bailer is the one means of definitely cleaning the hole of millings . . . quickly, and at lower cost than any other method.

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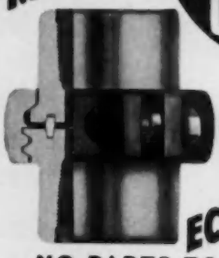

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as aluminum, die-cast metals, malleable iron, steel, wrought iron, etc. For each analysis of each metal, (such as high carbon steels, medium carbon steels, low carbon steels) recommendation of process, of filler rod, and special technique are given.

Catalog

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pennsylvania, has issued the second 1941 revision of the "Quick Selector" catalog. The catalog simplifies the selection of electrical equipment for any motor, lighting or feeder circuit.

Motors

The Wagner Electric Company, 6385 Plymouth Avenue, St. Louis, Missouri, has issued bulletin MU-183 describing the single-phase, direct-current, and small polyphase motors. The bulletin contains detailed descriptions of the construction of repulsion-induction motors, capacitor-start motors, fan motors and explosion-proof motors.

Letters to the Editor

War

DEAR SIR:

Your editorial "At War!" published in the December 15 OIL WEEKLY has been read by me to the employes of the Mid-Continent Division. In cases where it is feared that some of our employes in remote areas might not read your editorial, special copies have been forwarded to them.

I want to thank you for this editorial as I believe it will greatly assist me in showing our employes the importance of the conservation of the various metals used by our company.

R. B. Mc.

Tulsa, Oklahoma.

Scrap

DEAR SIR:

Since the declaration of war with Japan, I have become concerned about the conservation of rubber throughout the oil industry. I ran an advertisement on page 48 of the December 22nd issue of THE OIL WEEKLY, suggesting that they do not throw away Mission piston rubbers.

While I only mentioned piston rubbers in this advertisement, I feel that it can be carried still further throughout the petroleum industry, and all rubber goods used in the industry, such as piston rubbers, valve inserts, hose, gaskets, etc., should all be saved and accumulated at various points throughout the industry to be reclaimed for use in other industries where virgin rubber is not required. In most cases rubber in the petroleum industry is not consumed, but becomes worthless by breakage, and 90 to 95 percent of the actual rubber content is still there to be reclaimed.

I believe this is an important enough item for you to run an editorial on.

Mission Manufacturing Company,
Houston, Texas.

WALTER B. SHARP,
President.

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